CLASSIFICATION AND DISTRIBUTION OF THE SEXAVAE OF THE MELANESIAN SUBREGION (ORTHOPTERA, TETTIGONIOIDEA, MECOPODINAE)

by

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With 7 text-figures and 18 plates

Abstract

An attempt is made to classify the species of the genera *Sexava* Walker, *Segestes* Stål and *Segestidea* Bolívar on the basis of previously not used characters, such as the venation of the fore wing and the morphology of the male stridulatory apparatus.

The following new synonyms and new combinations are proposed: *Eumossula* C. Willemse, 1957 = *Segestidea* I. Bolívar, 1903; *Segestidea gracilis* (C. Willemse, 1957), comb. nov. (from *Eumossula*); *Segestes grandis* C. Willemse, 1955 = *Sexava coriacea* (Linné, 1758); *Sexava femorata* C. Willemse, 1940 = *Segestidea princeps* I. Bolívar, 1903 = *Segestidea novaeguineae* (Brancsik, 1897), comb. nov. (from *Moristus*); *Segestidea hanoverana* C. Willemse, 1957 = *Segestidea leefmansi* (C. Willemse, 1940), comb. nov. (from *Sexava*); *Segestidea insulana* C. Willemse, 1957 = *Segestidea uniformis* (C. Willemse, 1940), comb. nov. (from *Sexava*); *Segestidea acuminata* (Kästner, 1934), comb. nov. (from *Segestes*); *Segestidea rufipalpis* (C. Willemse, 1966), comb. nov. (from *Sexava*). Besides the following new taxa are described: *Segestes stibicki* sp. n., *Segestes cornelii* sp.n., *Segestes brevipennis* sp.n., *Segestidea gracilis simulatrix* ssp.n. and *Segestidea marmorata occidentalis* ssp.n.

Keys to the taxa and distribution maps are given. The range of the species and subspecies is now in agreement with the general zoogeography of the area concerned; previous records proved to be partly erroneous.

Contents

Introduction

The species of the genera group *Sexava* Walker, *Segestes* Stål and *Segestina* I. Bolívar are large katydids, called "coconut treehoppers" by entomologists. Some

of them have been reported as important pests of coconut trees in the Moluccas, New Guinea and the Bismarck Archipelago.

Dr. J. L. Stibick of the Department of Agriculture, Stock and Fisheries, Konedobu, Papua, has sent me material for identification since 1971. It came out that the taxonomy of this group of genera was considerably confused and generic distinction was not well understood. As a result, some species were described twice, in different genera.

The range of the species of the Sexavae covers the Philippines, Celebes, the Moluccas, New Guinea and the Bismarck Archipelago. The present study deals mainly with species occurring in the Melanesian Subregion.

Only the more important taxonomic references are mentioned. A more extensive, although incomplete, bibliography can be found in Beier (1966: 311—316). The measurements given throughout the text concern the lengths and are in millimeters. The nomenclature of the wing venation is that given by Ragge (1955). Figures of the male stridulatory apparatus and abdominal terminalia of the taxa of each genus are nearly on the same scale, those of the whole insects not. On the distribution maps, only reliable localities are indicated, while a few previous records are omitted as no material was at hand and identification appears doubtful.

MATERIAL AND ACKNOWLEDGEMENTS

Depositories of types and other material are given in abbreviated form throughout the text, as follows:

ANSP	Academy of Natural Sciences, Philadelphia;
BMNH	British Museum (Natural History), London;
BPBM	Bernice P. Bishop Museum, Honolulu;
CAS	California Academy of Sciences, San Francisco;
CW	Willemse's collection, partly Natuurhistorisch Museum, Maastricht, partly author's address;
DASF	Department of Agriculture, Stock and Fisheries, Konedobu, Papua;
IEM	Instituto Español de Entomologyéa, Madrid;
ITZ	Instituut voor Taxonomische Zoölogie, Amsterdam;
NMB	Naturhistorisches Museum, Basel;
NMW	Naturhistorisches Museum, Wien;
NR	Naturhistoriska Riksmuseet, Stockholm;
NS	Naturkundemuseum, Stettin;
RNH	Rijksmuseum van Natuurlijke Historie, Leiden.

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GENERIC AND SPECIFIC CHARACTERS IN SEXAVAE

The Sexavae, as understood by C. Willemse (1961: 93), refer to the "Sexava-Gruppe" of Karny (1924: 144) and Kästner (1934: 24) and comprise the genera: *Sexava* Walker, 1870, *Segestes* Stål, 1877, and *Segestidea* I. Bolyévar, 1903. Previously (Karny, 1924: 143; Kästner, 1934: 24), the name Sexavae was used in a much wider sense, covering also the Phrictae and Mossulae groups of genera. These three groups of genera are united under one of the two tribes recognized in the subfamily Mecopodinae, the Sexavini (called Moristini by Redtenbacher, 1892: 189; Segestini by Hebard, 1922: 176; Sexavae by Karny, 1924: 143, and Kästner, 1934: 24; Sexavinae by C. Willemse, 1961: 93; Sexavini by Beier, 1966: 305). Keys to the tribes and genera were given by Redtenbacher (1892: 189), Caudell (1916: 2), Karny (1924: 143, 147), Kästner (1934: 24, 32) and C. Willemse (1961: 93, 94, 107, 111). While the distinction between the Phrictae and the remaining genera of the tribe appears clear, that between the Mossulae and the Sexavae is more gradual and demands further study.

Distinction between the three genera of the Sexavae was based on the presence or absence of a posterior dorso-apical spine of the fore and mid tibiae, and the comparative measurements of body, fore wing, head and pronotum (Caudell, 1916: 3; C. Willemse, 1957: 42; 1961: 107). In *Sexava* and *Segestidea*, the apex of the fore and mid tibiae bears, at least at the posterior side, a small dorsal spine. This spine is not to be confused with one or more spines located more proximally on the dorsal margins of the tibiae. In *Segestes*, the dorso-apical spines are believed to be lacking. A study of the available material reveals that this character is indeed a reliable one, but that there are exceptions. In three out of 38 specimens assigned to *Segestes decoratus* Redtenbacher, dorso-apical spines of fore and mid tibiae are present. In these specimens the spines are sometimes very small and not uniformly present on all fore and mid tibiae. An explanation of these exceptions can be found in the remarkable stability of the occurrence of the dorso-apical spines in the subfamily. Actually, the presence of these spines has been used as a subfamily character as early as Brunner von Wattenwyl (1878: 10) until recently (Beier, 1955: 246; 1962: 2), although Redtenbacher (1892: 183) already gave comments on this point and re-defined the Mecopodinae. A renewed study of other *Segestes* material at hand, i.e. the remaining part of the material in the Vienna museum (Kaltenbach, in litt. 11.ii.1976) and of the type-species *vittaticeps* Stål, proves that the dorso-apical spines in that material are indeed lacking. Therefore it seems reasonable, in spite of the very few exceptions, to consider the presence or absence of dorso-apical spines of the fore and mid tibiae a character of generic significance.

The distinction between *Sexava* and *Segestidea*, as indicated previously, was arbitrary (Caudell, 1916: 3; C. Willemse, 1957: 42; 1961: 107). Among the characters mentioned, it was noted that the fore wing in *Sexava* is comparatively wider than in *Segestidea*, the venation not being mentioned. Also Redtenbacher, in his study on the wing venation (1886: 179, pl. 11 fig. 24), discussed the wings in *Moristus* (=*Sexava*), but omitted the true nature of its typical venation.

Comparison of the male fore wings of *Sexava*, *Segestidea* and *Segestes*, reveals

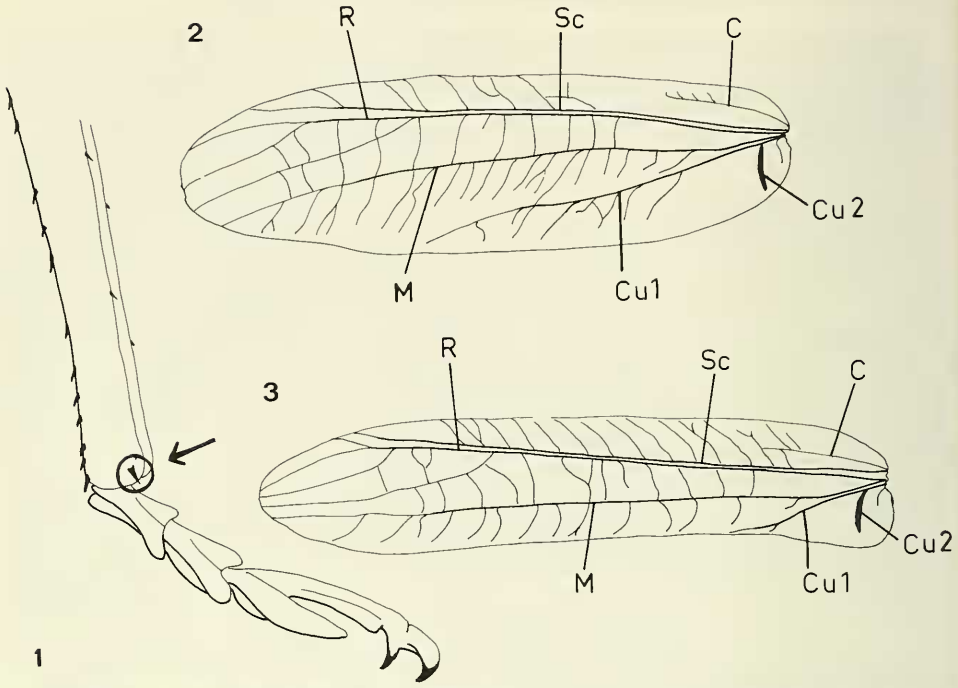


Fig. 1. *Segestidea*, right fore tibia and tarsus, posterior view. Figs. 2—3. Left male fore wing: 2, *Sexava coriacea* (L.); 3, *Segestidea novaeguineae* (Brancsik).

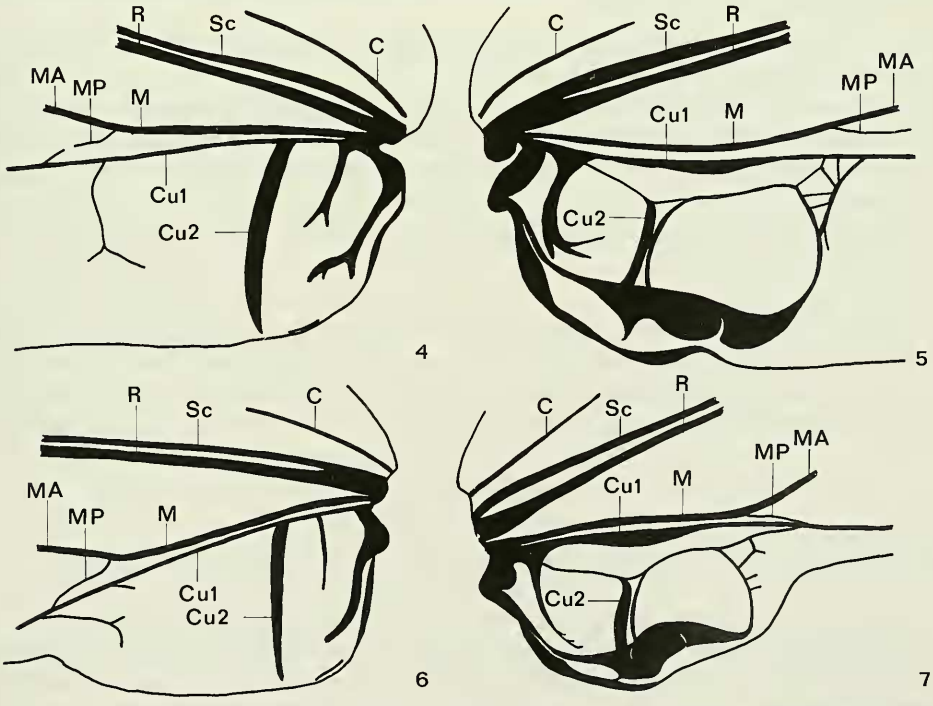
that the fore wings overlap each other basally over a short distance in *Segestidea* and *Segestes*, whereas in *Sexava* the overlap is conspicuous over most of their length. It proves that the course of the first cubital vein, Cu1 (which may fuse or not with the variably developed MP), in *Sexava* is remarkably different from that in both other genera. This character affects the stridulatory area of the male fore wing and is considered more reliable for a natural classification of species at generic level than previously used characters.

The flexed fore wing in the species of Sexavae is folded along Cu1. The result of this fold is to bring the areas behind Cu1 (cubital and anal areas) into a roughly horizontal position over the abdomen, the remainder of the wing being roughly vertical. In *Segestidea* and *Segestes*, Cu1 and its fold run obliquely to the hind margin of the wing, almost reaching the latter at a short distance from the wing-base (text-figs. 3, 6, 7). From there, Cu1 may more or less merge with the archedictyon or continue parallel but very close to the hind margin of the wing. Cu1 and its fold delimite a sharply defined triangular area at the wing-base. This area contains, in the male, the most important parts of the stridulatory organ: the file (=Cu2) of the left and the mirror and its frame of the right fore wing (text-figs. 4—7). In *Sexava*, however, Cu1 and its fold reach the hind margin of the fore wing considerably more distally, near or beyond the middle of the wing length and do not delimite a sharply defined triangular area (text-figs. 2, 4, 5). As a result, the first cubital area (between Cu1 and Cu2) in *Sexava* is conspicuously wide and

elongate, which is demonstrated also by the large overlap of the flexed wings, and the considerable extension of the hind margin of the flexed wing beyond the median line of the abdomen. It is noted here that these characters are very distinct in the male, but far less so in the female.

The high taxonomic significance of sound produced by Tettigoniids is widely recognized. Nevertheless, the structure of the stridulatory organ has been little used as a character. The present study makes use of some attributes of the male stridulatory organ, which can be easily examined: the file of the left fore wing and the mirror and its frame of the right one. These have been studied in most of the available males. The length, width and shape of the file, the number and spacial arrangement of its teeth and the shape, and especially the frame of the mirror of the opposite wing, are in most species and subspecies slightly variable and specific distinction is sometimes conspicuous. I did not have the opportunity to analyse the characters of the file as extensively as has been done in some Phaneropterine genera (Emsley, et al.,1967, 1969; Ragge, 1969; Huxley, 1970; Emsley, 1970; Moss, et al.,1970). Instead, I give a short description together with figures of the file and the mirror. As to the latter, it appears that the frame of the mirror, especially a vein modified into a fold along the hind margin of the mirror, is important for specific recognition.

Stridulation of the female in the Mecopodinae has been recorded by Karny (1924: 143), but his record refers to *Macrolyristes,* which is a member of the tribe



Figs. 4—7. Base of left and right male fore wing, dorsal view: 4—5, *Sexava coriacea* (L.); 6—7, *Segestidea novaeguineae* (Brancsik).

Mecopodini. Recently, Lloyd & Gurney (1975: 47—50) reported labral stridulation of a female attributed to *Sexava femorata* (= *Segestidea novaeguineae*). However, the morphological substrate of this kind of stridulation (labrum versus mandibulae) is obscure. A closer study of the fore wings of the female in Sexavae reveals that there is a stridulatory apparatus. It consists of rows of minute spines located on the dorsal surface of the veins near the hind margin of the cubito-anal areas of the right fore wing, where the hind margin of the left wing may function as a scraper. Due to uniform appearance throughout the species of the group, no reliable characters were found which would associate females with males of the same species. Similar spines were often found on the male right fore wing, just distally of the mirror.

Characters found to be more or less reliable at species or subspecies level, may be summarized: general appearance; length of fastigium of vertex; shape of pronotal lateral lobe, convexity of pronotal dorsum; fore wing (length, width, shape, archedictyon, apex, male stridulatory apparatus); spines of legs; shape of male subgenital plate and cercus; length of ovipositor; coloration of head, thorax, fore wing and legs.

Key to the genera *Sexava, Segestes* and *Segestidea*

1. Fore and mid tibiae with a small, posterior, dorso-apical spine (text-fig. 1) (refers to tip of tibia only, not to dorsal margins; if tibia stretched forward, posterior is "lateral" side) 2
— These spines lacking (with very few exceptions in *Segestes decoratus*); venation of fore wing as in *Segestidea*, see below . . . . . *Segestes* Stål
2. Cu1 and similarly located fold of fore wing running obliquely toward hind margin of wing at short distance from wing-base, delimiting well-defined triangular area, in male containing the main attributes of the stridulatory organ (text-figs. 3, 6, 7); flexed fore wings, except for triangular area at base, narrowly overlapping each other, hind margin not widely extending over median line of abdomen . . . . . *Segestidea* I. Bolívar
— Cu1 and its fold running to a point of the hind margin of fore wing near or beyond middle of wing-length, without delimiting a well-defined triangular area (text-figs. 2, 4, 5); flexed fore wings overlapping each other widely and over great distance of wing-length, hind margin extending far beyond median line of abdomen over almost whole length . . . . . *Sexava* Walker

Sexava Walker, 1870

Sexava Walker, 1870: 437.
Moristus Stål, 1873: 47 (type-species, by monotypy: *Gryllus* (*Tettigonia*) *coriacea* Linné, 1758)

Type-species, by monotypy: *Gryllus* (*Tettigonia*) *lanceolata* Stoll, 1813.

Walker based his genus on a female from Ceram, assigned by him with some doubt to Stoll's *lanceolata*. This species is synonymous with Linné's *coriacea*. Walker's specimen, however, does not agree with *lanceolata* (= *coriacea*), but with Stål's *nubila*, described in 1874, after Walker's publication. Stability and uniformity

of nomenclature is best served when neglecting Walker's misidentification (Article 70 (a) (iii) of the International Code of Zoological Nomenclature). Therefore I propose to maintain the current type-species.

Sexava, as indicated by the key above, is a natural group of species, characterized by the presence of posterior dorso-apical spines of fore and mid tibiae (text-fig. 1) in combination with the unusual course of the first cubital vein (Cu1) of the fore wing (text-figs. 2, 4, 5), resulting into the large overlap of the flexed fore wings both with each other and with the median line of the abdomen.

Up till now, the following taxa have been arranged under *Sexava:*
coriacea (Linné, 1758) (= *lanceolata* Stoll, 1813)
nubila (Stål, 1874) (*Moristus*)
novaeguineae (Brancsik, 1897) (*Moristus*)
karnyi Leefmans, 1927
femorata C. Willemse, 1940
uniformis C. Willemse, 1940
leefmansi C. Willemse, 1940
grandis (C. Willemse, 1955) (*Segestes*)
rufipalpis C. Willemse, 1966

Of this list, five taxa apparently belong to *Segestidea*, while only four taxa fit *Sexava* in its present concept: *coriacea*, *nubila*, *karnyi*, and *grandis*. The last will be synonymized with *coriacea* in the present paper.

Key to the species of *Sexava*

1. ♂, ♀: smaller, length of fore wing 50—60 mm; lower and part of inner side of proximal half of hind femur solid black; ♂: cercus with short apex (pl. 3 fig. 22), teeth of stridulatory file in posterior half very widely spaced (pl. 4 fig. 28) (Togian Is. and opposite part of Celebes) . . . . . *karnyi* Leefmans
— ♂, ♀: larger, wing-length more than 65 mm; hind femur without black parts; ♂: cercus with apex longer (pl. 3 figs. 18—21); teeth of stridulatory file more closely set (pl. 4 figs. 23—27) 2
2. ♂: subgenital plate wider, apical incision shorter, lobes wider, styli shorter (pl. 3 figs. 12—14); cercus with longer, more attenuate apex (pl. 3 figs. 18—19); teeth of stridulatory file narrowly set (pl. 4 figs. 23—25); ♂, ♀: pronotal lateral lobe usually as long as high; apex of flexed wings reaching middle third of hind tibia; ♀: subgenital plate usually shorter than wide; ovipositor longer, 40—50 mm, apex of flexed wings usually not reaching tip of the latter (Sangihe Is.; central Moluccas; ? Celebes; ?? New Guinea) . . . . . *coriacea* (Linné)
— ♂: subgenital plate narrower, apical incision longer, lobes narrower, styli longer (pl. 3 figs. 15—16); cercus with shorter, less attenuate apex (pl. 3 figs. 20—21); teeth of stridulatory file coarser (pl. 4 figs. 26—27); ♂, ♀: pronotal lateral lobe usually narrower, being shorter than high; apex of flexed wings reaching beyond middle of hind tibia, usually apical third; ♀: subgenital plate usually as long as wide: ovipositor shorter, 30—43 mm, apex of flexed wings reaching at least tip of the latter (Northern Celebes; Talaud and Nanusa Is;

southeastern Moluccas; Kei and Aru Is.; western and northeastern New Guinea) . . . . . *nubila* (Stål)

Sexava coriacea (Linné, 1758)
(text-figs. 2, 4, 5, pl. 1 figs. 1—4, pl. 3 figs. 12—14, 18, 19, pl. 4 figs. 23—25, pl. 5 fig. 29, map 1)

Gryllus (*Tettigonia*) *coriaceus* Linné, 1758: 430.
Gryllus (*Tettigonia*) *lanceolata* Stoll, 1813: 23, pl. 10a figs. 39-40.
Locusta lanceolata; de Haan, 1843: 214 (partim).
Moristus coriaceus; Stål, 1873: 95.
Sexava coriacea; Kirby, 1906: 359.
Segestes grandis C. Willemse, 1955: 36, fig. 2. **syn. nov.**
Sexava grandis; C. Willemse, 1957: 38 (footnote).

Material studied: Soela Mangoli, Pasi Spah, 18—19.iii.1930, Snellius Exp. (1♂ RNH); Ins. Buru, H. Kühn, coll. Br. v. W. (1♂ NMW); Batjan, Staudinger, coll. Br. v. W. (1♂ NMW); Ternate, 1894, W. Kükenthal (1♂ NMW); Halmaheira (1♂ 1♀ CW), 1894, W. Kükenthal (1♀ NMW), Djailolo forêt Todowangi, 16.ii.1929, Prince Léopold (1♂ CW); Sangir, A. Reyne, ex coconut palms (1♂ 1♀ BMNH); Sangir, xi.1948, C. Franssen, coconut leaf, ex coll. S. Leefmans (2♀ ITZ); Ambon (1♂ CW, 1♂ 1♀ ITZ), 1863, Hoedt (1♀ RNH), 1864, Hoedt (6♂ 2♀ RNH), Staudinger, coll. Br. v. W. (1♂ NMW), 1933, coll. R. Ebner, Rehn don. (1♀ NMW), 1859, Doleschal (1♀ NMW), 30 m, 1.ix.1961, A. M. R. Wegner, at light (1♀ CAS), Waai, 1.viii.1966, A. M. R. Wegner (1♀ CAS); Molukken, Depuiset, coll. Br. v. W. (1♀ NMW); Java (1♂ 1♀, De Haan vidit, RNH); Nieuw Guinea (1♂ CW); Celebes, 1884, Musschenbroek (2♀ ITZ); Obi I. (1♀ BMNH).

Segestes grandis: type-series, ♂ holotype: Obi Island, Anggai 30.v.1953; ♀ paratype: Obi Island, Laiwui, 20.ix.1953 (both specimens with appropriate identification and type-labels) (CW).

Additional material: Obi (1♂ CW), Telaga, 7.viii.1953 (1♀ CW), Laiwui, 29.ix.1953 (2♂ 1♀ CW, 2♂ 2♀ RNH), Wajaloar — Obi, 27.viii.1953 (1♂ RNH) (all identified by C. Willemse).

The Linnean type of *Gryllus* (*Tettigonia*) *coriaceus* could not be traced in London (Ragge & Mrs. Pitkins, in litt. 5.iii.1976).

The possible synonymy of Stoll's *lanceolata* with Linné's *coriacea* is discussed extensively by Karny (1931: 78-82). Stoll's material was from the collection of J. Raije van Breukelerwaert. This collection was sold 3 July 1827 in Amsterdam and the name *lanceolata* is found under the numbers 372 and 374 (p. 76) of the "Catalogue . . . d'objets d'histoire naturelle . . . Joan Raye de Breukelerwaert . . . sera vendu . . . à Amsterdam . . .". However, the specimens in question could not be traced in the collections at Amsterdam (ITZ) or Leiden (RNH). Nevertheless, the length of the female wings and ovipositor of Stoll's figure 39 makes identification possible. That figure perfectly fits *coriacea* and not *nubila*. Therefore I again propose to synonymize *lanceolata* with *coriacea*.

In the original description, *Segestes grandis* C. Willemse, 1955, was clearly distinguished from other members of that genus. In his 1957 paper, C. Willemse allocated the species correctly to *Sexava*, but distinction among species of that genus was omitted. Comparison of the types and additional topotypes of *grandis* with material of *coriacea* clearly reveals that *grandis* represents merely large individuals which are within the range of variation of *coriacea*. I propose to synonymize both taxa.

Sexava coriacea is defined as indicated in the key. A general description can be found under *Segestes grandis* by C. Willemse (1955: 36, fig. 2). Reliable characters are the male subgenital plate (pl. 3 figs. 12—14), cercus (pl. 3 figs. 18—19) and stridulatory file (pl. 4 figs. 23—25). The latter is slightly fusiform and arcuate, 4—8 mm long, number of teeth 48—92, the anterior 25—45 ones almost blunt and covering the anterior fourth, the other teeth sharp and arranged over the remaining length of the file. Width of the file increasing in the anterior third, reaching maximum 0.5—0.9 mm in the middle third, decreasing again posteriorly to about half maximum width. Spacing of teeth narrow, distinctly increasing from the anterior to posterior end of the file, between the posterior teeth about 2—4 times as large as between the anterior sharp teeth. The number of teeth and the maximum width depend mainly on the length of the file, while the spacing of the teeth is quite uniform. The mirror (pl. 5 fig. 29) is about as long as wide, roughly circular with the anterior margin almost straight. Fold of the mirror strongly inflated in the middle, slightly extending over the mirror, its outline from almost straight to slightly sinuate.

Variation. The measurements, especially the length and width of the fore wing (pl. 1 figs. 1—4) vary considerably. While the ovipositor usually extends beyond the apex of the flexed wings, they may be of the same length in the females from Sangihe and Obi Islands (pl. 1 figs. 3—4). The stridulatory file of the studied males from Buru and Ambon (pl. 4 fig. 25) is shorter (4—5.3 mm) and the number of teeth smaller (47—72), while the file in males from other islands (pl. 4 figs. 23, 24) is longer (5.4—8.2 mm) and the number of teeth larger (72—95). The male subgenital plate is variable (pl. 3 figs. 12—14) in width, the margins of the apical incision vary between smooth and slightly serrate and the tips of the lobes from truncate to slightly emarginate. Variation is also observed in the female subgenital plate. As in the stridulatory file, the variation of the subgenital plate of both sexes corresponds with the area of occurrence (compare also Leefmans, 1927b: pl. 5). However, the shape of the male cercus is quite uniform (pl. 3 figs. 18, .19). The pronotal lateral lobe of some specimens is slightly shorter than high. The general coloû, usually green, is sometimes brown. Fore wing and hind femur are always of general colour, lacking any pattern.

Measurements: body ♂ 60—85, ♀ 60—71; fore wing ♂ 65—80, ♀ 75—86; hind femur ♂ 43—48, ♀ 45—51; ovipositor 40—50.

Distribution. The range covers the central islands of the Moluccas and the Sangihe Is. The occurrence in Celebes and New Guinea needs confirmation (map 1).

Localities: Ambon (Redtenbacher, 1892: 201; Krauss, 1903: 747; Hebard, 1922: 180; Karny, 1924: 151; Leefmans, 1927b: 13); Buru (Karny, 1926: 183); Batjan

(Karny, 1924: 151); Sula Is. (Karny, 1924: 151), Pasi Spah near Sula Mangole; Obi (Hebard, 1922: 180; Karny in Leefmans, 1927b: 13), Anggai and Laiwui (C. Willemse, 1955: 36), Wajaloar and Telaga; Banggai Is., Labobo (Leefmans, 1927b: 13); Ternate (Brunner v. W., 1898: 199; Leefmans, 1927b: 13); Halmahera, Tobelo (Leefmans, 1927b: 13), Djailolo (C. Willemse, 1933: 9); Sangihe Is. (Leefmans, 1927b: 13); ? Celebes (Karny, 1924: 151).

Discussion. The species is well-defined in the male. However, distinction between the female of *coriacea* (pl. 1 figs. 3, 4) and the form of *nubila* (pl. 1 fig. 6), which occurs in the Talaud and Nanusa Is., may be very doubtful. Sometimes the following characters are helpful: the wider thorax, the absence of a series of yellowish dots on the radial area of the fore wing, and the longer ovipositor in *coriacea*.

A relation between the variation described above and the geographic distribution seems unreliable. However, the variation is gradual and no gap of any importance could be found. We are, of course, dealing with isolated populations living in numerous islands, which might explain the observed variation.

Some previous records should be discussed. The one from Ceram appears to be based on Walker's record of *lanceolata* (Walker, 1870: 437). As the specimen is now assigned to *nubila*, the occurrence of *coriacea* in Ceram needs to be confirmed. De Haan's record (1843: 214) of *lanceolata* from "Timor, Java" should be considered unreliable as it was done by Karny (1931: 83). De Haan's material examined consists of 2♂ 2♀ (RNH), all labelled "Java". One pair agrees with *coriacea* (as from Ambon), the other pair with *nubila* (as from the Moluccas). The occurrence of *coriacea* in Celebes should be confirmed, as it was based on 2♀ of doubtful origin before me and another ♀ recorded by Karny (1924: 151). The same can be said of its occurrence in New Guinea, which is based on 1♂ 3♀ from Hollandia (Karny, 1924: 151) and 1♂ at hand of doubtful origin, labelled "Nieuw Guinea". All Hollandia and other material from New Guinea before me belongs to *nubila*.

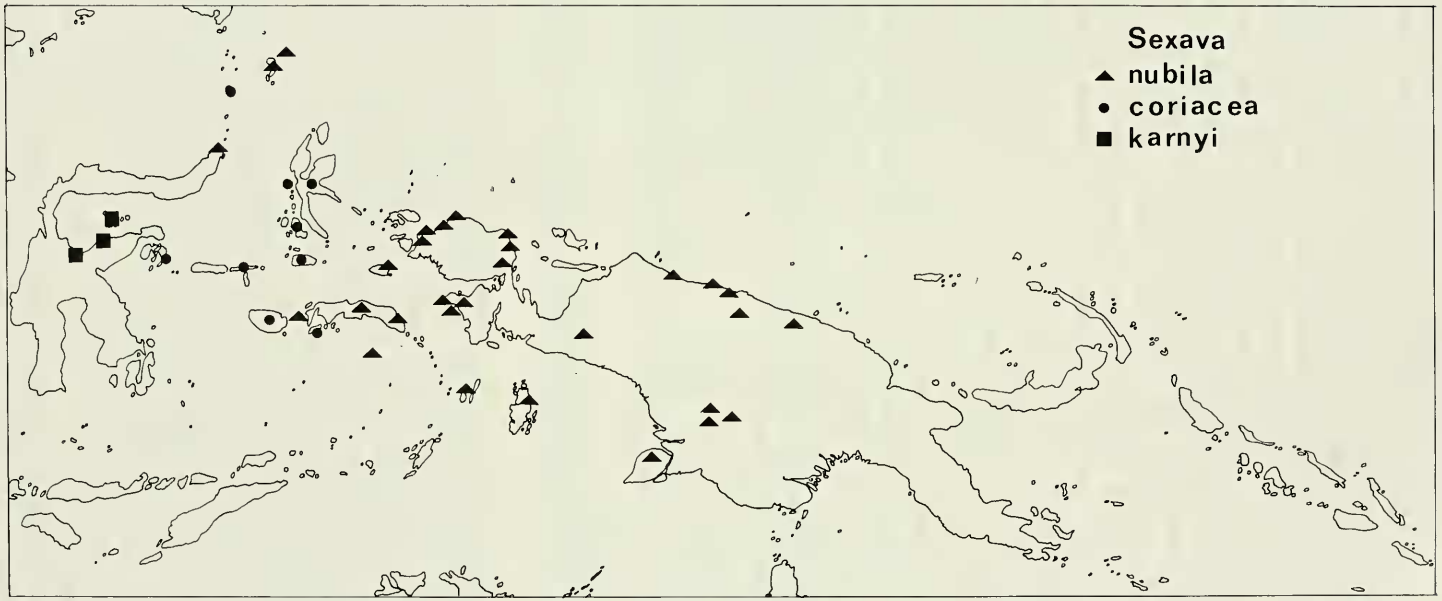
Sexava nubila (Stål, 1874)

(pl. 1 figs. 5, 6, pl. 2 figs. 7—9, pl. 3 figs. 15, 16, 20, 21, pl. 4 figs. 26, 27, map 1)

Moristus nubilus Stål, 1874: 96.
Sexava lanceolata (nec Stoll); Walker, 1870: 437.
Locusta lanceolata; De Haan, 1843: 214 (partim).
Sexava nubila; Kirby, 1906: 359.

Material studied: ♀ holotype, labelled: 292 76 (NR) (parts of antennae lacking, apex of fore wings slightly damaged).

Additional material: Celebes, Manado, i.1932, A. Reyne (1♂ BMNH); Talaud Is., A. Reyne, ex coconut palms (1♂ 1♀ BMNH), iv.1949, C. Franssen, on coconut, ex coll. S. Leefmans (1♂ 1♀ ITZ), Beo, 14—21.vi.1930, Snellius Exp. (6♂ 3♀ RNH); Manipa, 1864, Hoedt (1♂ RNH); Ceram (1♀ BMNH), Rukuwa, 30 km E. of Amakar Kowsuto, 3.v.1970, R. F. Ellen (1♂ 1♀ BMNH); Misool, 1870 (1♀ ITZ); Kei Is., C. Ribbe, coll. Br. v. W. (1♂ NMW), Kühn, coll. Br. v. W. (1♀



Map 1. Distribution of *Sexava* species.

NMW), 1903 (1♂ BMNH); Aru-Inseln, C. Ribbe, coll. Br. v. W. (1♂ 1♀ NMW); Banda Is., 5° S, 130° E, 6.iv.1975, J. E. Lloyd (1♂ CW); West New Guinea: Sekroë, iii.1897, Schaedler (3♂ RNH); Fak Fak, viii.1874, C. J. L. Palmer (4♂ 3♀ RNH); Poel Pandjang or Noha, viii.1904, Jhr. v. Nanhuijs (1♀ RNH); Sorong, 1.iii.1929 (1♂ 2♀ CW) & entre Sakoemi et Moemi, 13.iii.1929 (1♀ CW) & Manoi — Salawati, 2.iii.1929 (2♂ CW), Prince Léopold; Sedorfojo, vii.1952 (1♂ RNH) & Seribaai, 5.viii.1952 (1♂ RNH), Mevr. Marcus v. d. Nieuwenhuizen; Komara, ii.1963, Hr. & Mevr. Marcus v. d. Nieuwenhuizen (1♂ RNH); Jef Lie, 18.ii.1957 (3♂ 2♀ CW) & Sansapor, vi.1961 (1♂ 1♀ CW) & Mega, 22.vii.1961 (1♂ CW) & Koor, 26.vii.1961 (1♂ CW), R. T. Simon Thomas; Andai, acq. 1870, Rosenberg (1♀ RNH); Paniai, 27.xi.1939, Nieuw Guinea Exp. N.A.G. 1939 (1♂ RNH); Bernhard camp, 50 m, vii.1938, J. Olthof, Neth. Ind. Amer. New Guinea Exp. (1♂ 1♀ RNH); Maffin Bay, vi.1944, E. S. Ross (1♂ 3♀ CAS); Hollandia, 1955—1956, A. Klaassen (1♀ RNH), Ned. Nw. Guinea Exp. 1911, Dr. P. N. v. Kampen (3♂ 6♀ RNH), vii.1938, L. J. Toxopeus, Neth. Ind. Amer. New Guinea Exp. (1♂ RNH); Zoutbron, vi—vii.1911, Ned. Nw Guinea Exp. 1911, Dr. P. N. v. Kampen (1♀ RNH); Tanah Merah baai (South New Guinea), 19.viii.1910, Ned. Nw Guinea Exp. 1911, Dr. P. N. v. Kampen (1♂ RNH); Mindiptana, 26.xi.1958, Br. Monulphus (1♂ CW, 1♀ RNH); Mariang a. d. Digoel, 10 m, 12.ix.1959 (1♂ RNH) & Kouh a. d. Digoel, 8.ix.1959, 10 m (8♂ 7♀ RNH) & Kowage, 10 m, 8.ix.1959 (6♂ 1♀ RNH) & Hijob, 25 m, 10.ix.1959 (1♂ 2♀ RNH), Neth. New Guinea Exp. Star Range; Java (De Haan vidit) (1♂ 1♀ RNH); Sepik District (East New Guinea), Bainyik, 1.xii.1959 & 11.xii.1953, J. H. Ardley (2♀ DASF).

Stål described the species after a female. Sjöstedt (1933: 14, pl. 25 fig. 1), however, figured a male as Stål's type. Dr. T. Kronestedt (in litt. 24.iii.1976) informed me as follows:

"1. The specimen which Sjöstedt figured is the only one placed under the label *Sexava nubila* in our collection, and it is obviously the same specimen as he figured.

2. The same drawer contains also 3 specimens placed under *coriacea* L., two of which bear a name label "coriacea", one without any label. . . . Assuming that the one lacking any label is the type of *nubila*, we compared the measurements given in Stål's original description with the measurements given in his redescription of *coriaceus*. It then turned out that Stål's measurements given for *coriaceus* fitted the specimen which he had labelled as such and his measurements given for *nubila* fitted the specimen without labels.

3. The male specimen labelled *nubilus* bears labels in Stål's handwriting "Moristus Stal" and "nubilus Stal" as well as a label "Platyphyllum coriaceum (?) L. Serv." and a red printed label "Typus", the latter apparently put on by Sjöstedt."

Presumably, when Sjöstedt figured the type of Stål's *nubilus*, the male erroneously beared Stål's labels instead the female. The latter specimen is before me and agrees fully with Stål's description. It is considered the holotype of *Moristus nubilus* (pl. 2 fig. 7).

The additional material at hand from New Guinea, Kei and Aru Is. and the southeastern Moluccas agrees with the holotype. The particular form of the

species occurring in Talaud and Nanusa Is. is discussed below.

The species is defined as indicated in the key. Quite characteristic are the shape of the male subgenital plate (pl. 3 figs. 15, 16), the cercus (pl. 3 figs. 20, 21) and the stridulatory file (pl. 4 figs. 26, 27). The latter, compared with *coriacea*, is less fusiform and arcuate, 5.5.-7.0 mm long, number of teeth 54-65 of which the anterior 10-20 are fine and about blunt, covering the anterior sixth to eighth part of the file. Width of the file strongly increasing in the anterior part, reaching maximum 0.6-0.8 mm in the middle third, decreasing posteriorly but slightly. Spacing of the teeth wider than in *coriacea*, moderately increasing posteriorly, distance between successive posterior teeth 1-2 times as large as between the anterior sharp teeth. Mirror and its frame of the right male fore wing slightly different from that in *coriacea*, but the available material of the latter does not allow reliable conclusions.

Variation. In spite of individual variation, the shapes of the male subgenital plate, cercus and stridulatory file, are rather uniform throughout the material at hand, including that from Talaud Is. The same can be said of the female subgenital plate, figured by Leefmans (1927b: pl. 5 fig. 3). Material from New Guinea (pl. 1 fig. 5, pl. 2 fig. 8), Kei and Aru Is. and the southeastern Moluccas is uniform in general appearance (slender) and coloration (brown). However, that from Talaud Is. (pl. 1 fig. 6, pl. 2 fig. 9), Nanusa Is. (cf. Leefmans, 1927b and the male from northern Celebes differ in more robust general appearance, wider thorax, wider and comparatively shorter wings and often green general colour. The lower sides of the femora of a male from Banda are dark brown, but not solid black. In all material at hand, usually a series of distinct dark brown flecks with a central yellow dot on the radial area of the fore wing is present.

Measurements: body ♂ 55—72, ♀ 50—70; fore wing ♂ 68—80, ♀ 75—86; hind femur ♂ 35—43, ♀ 38—43; ovipositor 30—43.

Distribution (map 1). The range covers northeastern and all western New Guinea, Kei and Aru Is., southeastern Moluccas, extending into the Talaud and Nanusa Is. and (?) northern Celebes.

Localities: Celebes: Manado; Talaud and Nanusa Is. (Leefmans, 1927b: 13; Oudemans, 1927: 267; Franssen, 1954: 99-102; Reyne, 1960: 232); Manipa (between Buru and Ceram); Ceram (Walker, 1870: 437), East Central and Watai (Karny, 1924: 151), Rukuwa; Banda; Misool; Kei Is. (Redtenbacher, 1892: 201; Karny, 1926: 183); Aru Is. (Redtenbacher, 1892: 201); West New Guinea: Sekroë; Pandjang I.; Sorong (C. Willemse, 1933: 9); Sakoemi-Moemi; Manoi-Salawati (C. Willemse, 1933: 9); Sedorfojo; Seribaai; Komara; Jef Lie; Sansapor; Fak Fak; Mega; Koor; Andai; Manokwari (C. Willemse, 1933: 9); Paniai; Bernhard Camp; Maffin Bay; Hollandia (Karny, 1924: 151); Zoutbron; South New Guinea; Tanah Merah baai; Süd-Neuguinea (Karny, 1924: 151); Frederik-Hendrik I. (Karny, 1924: 151); Mindiptana; Mariang; Kouh; Kowage; Hijob. East New Guinea: Sepik distr., Bainyik.

Discussion. The species is well-defined in the male. The female of the form occurring in the Talaud and Nanusa Is., however, resembles strongly that of *coriacea*. Their distinction is discussed above under the latter species. Besides, the

female of *nubila* resembles superficially that of *Segestidea novaeguineae*. The latter differs in more oblique course of Cu1 of the fore wing, stronger ventral spines of the hind femur and in colour pattern of the hind leg.

A record of *nubila* from Java (K. K. Hofmuseum Wien) by Redtenbacher (1892: 201) is unreliable (Karny, 1924: 151). His material could not be traced in the Vienna museum (Kaltenbach, in litt. 12.xi.1975). The pair labelled "Java" of De Haan is discussed under *coriacea*, and the locality is considered unreliable. Karny's record (1924: 151) from Batjan was based on 1♀ while 1♂ 2♀ of the same series (originating from Leefmans) were assigned to *coriacea*. I doubt the correct identification of the "*nubila*" female. The occurrence of *nubila* in Batjan should be confirmed, based on a male. Of zoogeographic interest is the Manado male (N. Celebes), which agrees fully with the *nubila* form of the Talaud and Nanusa Is. This single record needs confirmation as the locality appears isolated from the known range of the species (map 1).

Sexava karnyi Leefmans, 1927

(pl. 2 figs. 10, 11, pl. 3 figs. 17, 22, pl. 4 fig. 28, map 1)

Sexava karnyi Leefmans, 1927a: 411, figs. 1-5 (type-locality: Poat I.).

Material studied: Kp. Baroe (Ampana M. Cel.), viii.1949, A. Cohen, on coconut (1♂); Posso, ix.1948, Dr. C. Franssen, on coconut leaf (1♀) (both ex coll. Dr. S. Leefmans, ITZ).

The types of this species could not be traced. The material before me (pl. 2 figs. 10, 11) agrees completely with the description and figures of *karnyi*. The fore wing, which is wide and rather tapering apically, shows the venation characteristic in *Sexava*.

The species is defined in the key. The stridulatory file (pl. 4 fig. 28) of the available male is 6.5 mm long, number of teeth 60, of which the anterior 35 about blunt and covering the anterior fourth of the file length. Width of the file increasing in anterior half, reaching a maximum of 0.4 mm in middle, decreasing posteriorly to 0.2. mm. Spacing of the teeth conspicuously increasing posteriorly, greatest distance between successive posterior teeth about 10 times more than between the anterior sharp teeth. Mirror and its frame of right male fore wing much as in the other two species of the genus. Flexed wings reach the apical third of hind tibia and tip of ovipositor. The male subgenital plate (pl. 3 fig. 17; Leefmans, 1927a: fig. 2) resembles much that in *nubila*. The male cercus (pl. 3 fig. 22) has a robust and short apex, bearing a minute spine on its anterior edge. The female subgenital plate of the available specimen appears more widely emarginate than in the figure by Leefmans (1927a: fig. 3). The coloration of the pair agrees fully with the original description: general colour brown, lower and inner side of proximal part of hind femur conspicuously solid black.

Measurements (partly after Leefmans): body ♂ 53—58, ♀ 48—54; fore wing ♂ 52—53, ♀ 56—60; hind femur ♂ 36—40, ♀ 38—39; ovipositor 26—27.

Distribution. Known only from Togian Is. and the southern opposite part of Celebes (map 1).

Localities: Poat I. (Leefmans, 1927a: 412); Celebes: Posso; Ampana.

Discussion. The species is well-defined, especially by the male stridulatory file and the coloration of the hind femora. Variation is insufficiently known. Previously recorded only from the type-locality.

Segestes Stål, 1877

Segestes Stål, 1877: 45; Redtenbacher, 1892: 189, 197.

Type-species by monotypy: *Segestes vittaticeps* Stål, 1877.

Segestes is characterized, as noted in the key, by lacking the dorso-apical spines of fore and mid tibiae in combination with usual course of Cu1 of the fore wing, delimiting a well-defined triangular area which, in the male, contains the main attributes of the stridulatory apparatus. As pointed out above under the generic characters, exceptionally a dorso-apical spine has been found on the fore and mid tibiae of some specimens considered *Segestes decoratus*.

Up to now, the following taxa have been arranged under *Segestes*:
vittaticeps Stål, 1877
punctipes Redtenbacher, 1892
unicolor Redtenbacher, 1892
fuscus Redtenbacher, 1892
decoratus Redtenbacher, 1892
frater Hebard, 1922
sp. Leefmans, 1927
celebensis Karny, 1931
beieri Kästner, 1934
acuminatus Kästner, 1934
grandis C. Willemse, 1955 (correctly assigned to *Sexava* by C. Willemse, 1957)

The latter taxon is synonymized with *Sexava coriacea* (see above) and *acuminatus* is now transferred to *Segestidea*. Of the other species three occur in the Philippines, one in Palau I., one in Celebes, one in Obi and one in New Guinea. The typespecies, *unicolor* from Palau I. and *decoratus* from New Guinea, will be discussed, while the other species are shortly memorized only. Three new species from New Guinea will also be described. Provisional keys to previously recognized species were given by Redtenbacher (1892: 198), Kästner (1934: 46), and C. Willemse (1961: 107). When using these keys, it is noted here that styli of the male subgenital plate of *vittaticeps* were incorrectly thought to be lacking. A key to the species occurring in New Guinea is given below.

Segestes vittaticeps Stål, 1877

(pl. 6 fig. 30, pl. 7 fig. 34, pl. 9 figs. 48, 53, pl. 10 fig. 64)

Segestes vittaticeps Stål, 1877: 45.

The species is known from the syntypes (1♂ 1♀ RN), 1♂ (NMW) recorded by

Redtenbacher (1892: 198) (misidentification?) and 1♂ 2♀ (ANSP) recorded by Hebard (1922: 176). The syntypes were figured by Sjöstedt (1933: 14, pl. 22 figs. 2, 3) and the male subgenital plate of Redtenbacher's male by Kästner (1934: 47, fig. 14).

The male syntype is before me and hereby designated lectotype (pl. 6 fig. 30, pl. 7 fig. 34). It is labelled: Ins. Philipp., Semper, *Segestes vittaticeps* Stål, Typus. The specimen agrees with Stål's description and Sjöstedt's figure, but lacks part of the stridulatory file, which was not so in Sjöstedt's figure, and the position of the legs differs also slightly from that figure.

Redescription.

Small (pl. 6 fig. 30, pl. 7 fig. 34). Fastigium of vertex obtusely pointed, reaching about middle of scape, shallowly sulcate. Pronotum with dorsum somewhat flattened medially, slightly rounded laterally, anterior margin slightly convex, posterior margin straight; lateral lobe slightly longer than high, deepest point of lower margin about in the middle, from there rounded, posteriorly more so than anteriorly.

Flexed wings extending just behind hind knee. Fore wing narrow, in distal half gradually tapering toward narrowly rounded apex; archedictyon well developed, membrane more or less opaque; Cu1 running obliquely toward hind margin of wing, almost reaching the latter at short distance from wing-base and from there parallel and close to hind margin of wing, vanishing into archedictyon about middle of wing length; stridulatory area well-defined, file partly lacking; mirror (pl. 10 fig. 64) twice as long as wide, elongate-elliptical, fold extending slightly over mirror, its outline almost straight and parallel to anterior margin of mirror.

Fore and mid femora unarmed. All knee-lobes with one spine. Fore tibia without dorsal spines, mid tibia with 2 dorsal spines on distal half of posterior margin, no dorso-apical spines. Apical half of hind femur with series of ventral spines.

Cercus (pl. 9 fig. 53) almost rectangularly incurved in apical fourth, gradually tapering to a short tooth. Subgenital plate (pl. 9 fig. 48) strongly elongate, slightly narrowing apically, apex divided by comparatively deep, narrowly parabolic incision into pair of lobes, tips of the latter truncate with distinct styli.

General colour pale brown ("olivaceo-virescens" in Stål's description). Median black stripe over occiput, narrowing anteriorly and reaching fastigium of vertex. Hind margin of fore wing narrowly yellowish-white. Lower and inner sides of proximal half of hind femur solid black. Spines of legs with tips black, of hind femur black at their bases.

Measurements: body 39; fore wing 33; hind femur 28.

Distribution. As far as now only known from the Philippine Is.: — (Stål, 1877: 45; Redtenbacher, 1892: 198); Surigao, Mindanao (Hebard, 1922: 176).

Discussion. Redtenbacher and Kästner based their diagnosis of *vittaticeps* on a male in the Vienna museum. The subgenital plate of this specimen, figured by Kästner, lacks the styli, a character used in their keys to the species. Whether this difference with Stål's type is of much importance is an open question.

Segestes punctipes Redtenbacher, 1892

Segestes punctipes Redtenbacher, 1892: 199.

Known only from the ♀ holotype (NMW). The species is discussed by Hebard (1922: 177).

Distribution. Philippine Is., without precise locality.

Segestes fuscus Redtenbacher, 1892

Segestes fuscus Redtenbacher, 1892: 199.

Known only from the ♀ holotype (NMW).

Distribution. Philippine Is., without precise locality.

Segestes celebensis Karny, 1931

Segestes celebensis Karny, 1931: 72, fig. 37.

Know only from the ♂ holotype and 1 juvenile ♀ (depository?).

Distribution. Celebes: Matinang-Kette & Minahassa, Karowa-Popo.

Segestes beieri Kästner, 1934

Segestes beieri Kästner, 1934: 48, figs. 15—17.

Known only from the syntypes (1♂ 1♀ NS).

Distribution. Philippine Is.: Mindoro (Kästner, 1934).

Segestes frater Hebard, 1922

Segestes frater Hebard, 1922: 177, pl. 16 fig. 2.

Known only from the ♀ holotype (ANSP) and 1♂ (NS). The latter was described by Kästner (1934: 51, figs. 20, 21). I have before me a female from Laiwui, Obi, 29.ix.1953 (CW), which agrees with Hebard's description except for the coloration, which is unicolorous green.

Distribution. Known only from the Moluccas: Obi (Hebard, 1922: 177; Kästner, 1934: 51).

Segestes sp. Leefmans, 1927

Segestes sp. Leefmans, 1927b: 15, pl. 5 fig. 4, pl. 6 fig. 4.

According to Leefmans (1927b) and Karny's opinion, a not yet described species from Loleba I., near Halmaheira. I could trace only one discoloured female in bad condition, labelled: *Segestes* spec. Loleba I. (Halmaheira) sent by Leefmans (BNNH). The specimen agrees with Leefmans' data but by lack of the male, further comments are postponed.

Segestes unicolor Redtenbacher, 1892

(pl. 6 fig. 32, pl. 7 fig. 35, pl. 9 fig. 54, pl. 10 fig. 59)

Segestes unicolor Redtenbacher, 1892: 199.

Known from the ♀ holotype (NMW) and another ♀ (BPBM) recorded by C. Willemse (1951: 342). I have before me 2♂ labelled: West Caroline Is., Koror, Palau, 1.xii. & 20.x.1971, M. R. Lundgren (CAS). Presumably, on the basis of topographic evidence, these males represent *unicolor*.

Description of male.

Small (pl. 6 fig. 32, pl. 7 fig. 35). Head, thorax and wings as in *vittaticeps*. Stridulatory file (pl. 10 fig. 59) slightly arcuate and fusiform, 2.9—3.0 mm long, number of teeth 100—110, of which anterior 20—30 ones fine, blunt and covering anterior sixth of file length. Width of file reaching maximum 0.2 mm at the end of proximal fourth of file length, decreasing slightly posteriorly. Spacing of teeth almost regular. Stridulatory area of right fore wing as in *vittaticeps*.

Anteroventral margin of fore and mid femora with 1—3 spines in apical half. Knee-lobes with one spine. Fore tibia without dorsal spines, posterodorsal margin of mid tibia with 5 spines, no dorsoapical spine. Hind femur with series of ventral spines.

Cercus (pl. 9 fig. 54) slender, incurved in apical fourth, rather abruptly tapering to short, slightly incurved apical tooth. Subgenital plate as in *vittaticeps*.

Unicolorous pale brown or pale green, except for yellowish-white hind margin of fore wing and spines of legs, which are completely black or with tips black.

Measurements: body 36—37; fore wing 38—39; hind femur 27—28.

Distribution. Known only from Pelew (Redtenbacher, 1892) or Palau I. (C. Willemse, 1951), West Caroline Is.

Discussion. As far as can be judged now, the species differs from the type-species mainly in the shape of the male cercus and the uniform coloration. A record under the name *unicolor* by Karny (1924: 150) from Neu-Pommern (= New Britain) probably does not refer to this species, but to *Segestes decoratus*.

Among the material before me from New Guinea and the Bismarck Archipelago, four species of *Segestes* can be recognized: *decoratus* Redtenbacher, *cornelii* sp.n., *stibicki* sp.n., and *brevipennis* sp.n.

Key to the species of *Segestes* from New Guinea and the Bismarck Archipelago

1. Fastigium of vertex (pl. 9 figs. 46, 47) long, reaching at least apical margin of scape, apex acute, thorn-like; apex of fore wing wide, more or less truncately rounded; knee-lobes usually with one spine; ♂ subgenital plate with or without styli 2
— Fastigium of vertex (pl. 9 fig. 45) shorter, by far not reaching apical margin of scape, apex obtusely pointed; apex of fore wing narrowly rounded; knee-lobes usually with two spines; ♂ subgenital plate with styli, cercus, stridulatory file

and mirror with frame as in pl. 9 figs. 49, 55, pl. 10 figs. 60, 65 (NW and E. New Guinea, western New Britain) . . . . . *decoratus* Redtenbacher

2. Larger, wing length ♂ ♀ 57—64 mm (pl. 6 fig. 31, pl. 7 fig. 40); ♂ subgenital plate without distinct styli, cercus, stridulatory file and mirror with frame as in pl. 9 figs. 50, 56, pl. 10 figs. 61, 66 (East New Guinea) . . . . . *cornelii* sp.n.
— Smaller, wing-length ♂ ♀ 32-47 mm (pl. 7 figs. 38, 39, 41, pl. 8 figs. 42—44); ♂ subgenital plate with styli as in pl. 9 figs. 51, 52 3
3. Fastigium of vertex reaching 2nd—3rd antennal segment (pl. 9 fig. 47); ♂ subgenital plate with narrow, parallel-sided apical incision and distinct styli (pl. 9 fig. 51); ♂ stridulatory file about 2.4 mm long with about 150 teeth (pl. 10 fig. 62) (East New Guinea: Madang District) . . . . . *stibicki* sp.n.
— Fastigium of vertex shorter, reaching apical margin of scape; ♂ subgenital plate with V-shaped apical incision and minute styli (pl. 9 fig. 52); ♂ stridulatory file about 2 mm long with about 71 teeth (pl. 10 fig. 63) (West New Guinea) . . . . . *brevipennis* sp.n.

Segestes decoratus Redtenbacher, 1892

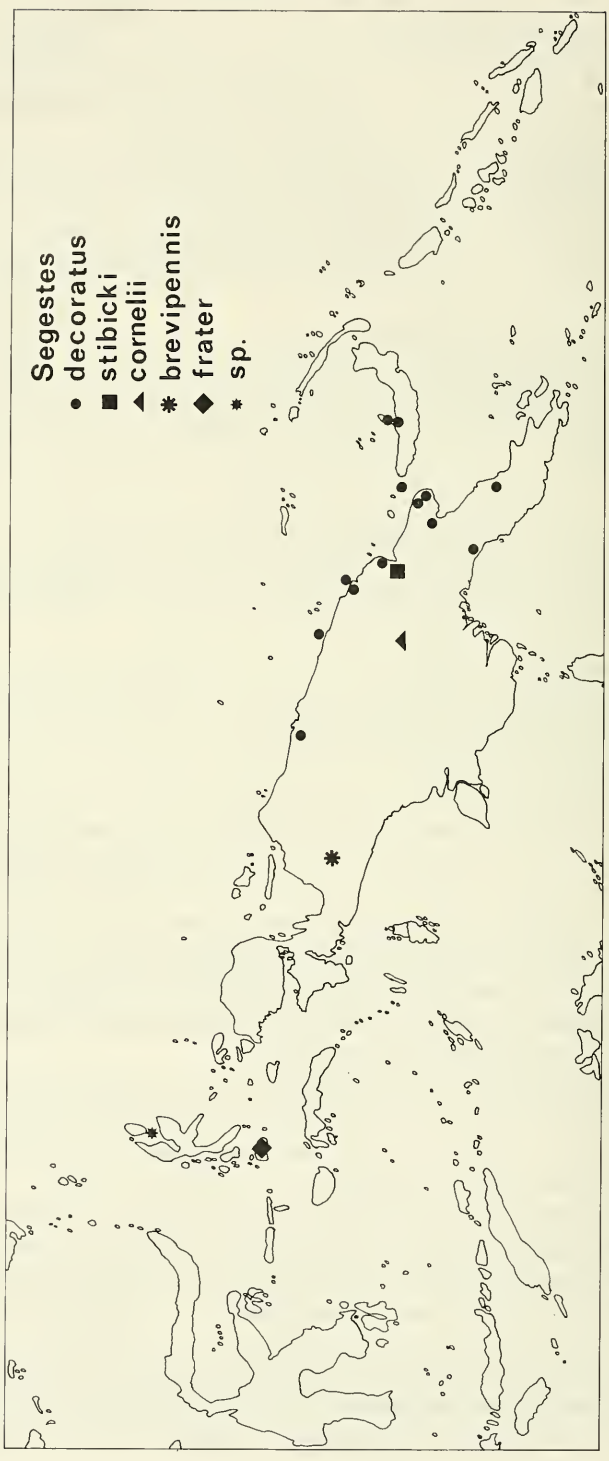
(pl. 6 fig. 33, pl. 7 figs. 36, 37, pl. 9 figs. 45, 49, 55, pl. 10 figs. 60, 65, map 2)

Segestes decoratus Redtenbacher, 1892: 18, fig. 4; Kästner, 1934: 52.
Segestes unicolor; Karny, 1924: 150(?).
Eumossula gracilis; C. Willemse, 1958: 122 (only Bubia); F. Willemse, 1966: 48 (same).
Segestidea insulana; F. Willemse, 1966; 48 (only Bubia).
Sexava femorata; F. Willemse, 1966: 49 (only 1 ♀ Manam I.).
Sexava species B: O'Connor, 1959: 122.

This species was badly known. It was described after a pair from "Neu-Guinea". The male could not be traced in the Vienna museum (Kaltenbach, in litt. 11.ii.1976). The female is before me and is considered holotype (pl. 7 fig. 36). Kästner (1934) recorded additional material from "Neu-Guinea", but gave no further comments. The material listed below agrees with the holotype.

Material studied: ♀ holotype, labelled: Coll. Br. v. W. Neu-Guinea Fruhstorfer, det. Br. v. W. *Segestes decoratus* Redt., Typus, 18 366 (NMW) (lacks parts of tarsi; left side of head and thorax slightly crushed).

Additional material: N. Nov. Guinea, Boven Sermowai, NNW 400 m, 1—8.vi.1911, N.K.G. (= NW New Guinea) (1♂ RNH); Gulf District, Murua Agric. Stat. near Kerema, vii.1959, F. X. Rayan, on cocos (1♂ 1♀ DASF); Northern District, Popondetta, Casey's Plantation, xi.1960 & 10.v.1960, G. S. Dunn, under the bark of bush trees (1♂ 1♀ DASF); Morobe District, Siassi I., 6.xii.1969, A. Hinton, defoliating coconut palms (1♂ DASF); Agric. Exp. Stat. Bubia near Lae, 28.iii.1955, J. Szent-Ivany, on coconut frond (1♂ *Segestidea insulana* det. C. Willemse 1958 & 1♂ 1♀ *Eumossula gracilis* det. C. Willemse 1958, CW); Bubia Agric. Stat., 20.iii.1957, Luna de Carvalho (1♀ BMNH); Bubia via Lae, 12.vii.1960, A. Catley, feeding on *Cocos nucifera* (5♂ 5♀ CW); Deutsch Neu-Guinea, Sattelberg, H. Rolle, Berlin (1♂ CW); Siki via Finschhafen, 20.vii.1960, A. Catley, ex *Cocos nucifera* (1♂ DASF); Madang District, Manam I., Baliau



Map 2. Distribution of *Segestes* species.

Village, 26.ix.1960, J. I. Cox (1♀ *Sexava femorata* det. C. Willemse, CW); Awar Plantation, via Bogia, xi.1960, J. I. Cox (3♂ 2♀ CW); Madang, 4.v.1932, J. L. F., coconuts (1♂ BMNH); West New Britain, Bitokara C. M., Talasea, 26.ii.1971, T. Laklo, on coconuts (5♀ DASF); Talasea, Volupai Plantation, 10.v.1966. D. F. O'Sullivan (1♀ DASF); West New Britain, Lingalinga Plantation, vi.1959, J. H. Barrett, on *Theobroma* (1♀ DASF); West New Britain, Wakanaka Village, 23.i.1974, C. H. Perry, resting in fronds of coconut (1♀ DASF).

Redescription.

♂ (pl. 6 fig. 33), large. Fastigium of vertex (pl. 9 fig. 45) extending but slightly beyond antennal scrobae, reaching middle of scape or shorter, apex obtusely pointed, often with shallow furrow. Pronotal dorsum strongly rounded laterally, anterior margin slightly convex, posterior one straight. Lower margin of pronotal lateral lobe obtuse-angulately rounded, deepest point just distally of middle of lobe length, from there slanting upwards, posteriorly steeper than anteriorly.

Flexed wings reaching middle of hind tibia or slightly shorter. Fore wing narrow, tapering gradually towards narrowly rounded apex; moderate archedictyon. Stridulatory file (pl. 10 fig. 60) scarcely arcuate, 3.5—4.0 mm long, number of teeth 183—196, of which anterior 50—60 fine, more or less blunt and covering anterior fifth to sixth of file length, the other 130—140 ones sharp. Width of file reaching maximum 0.4—0.5 mm at end of proximal fourth of file length, decreasing posteriorly to one-third of maximum width. Spacing of teeth slightly increasing posteriorly, comparatively more in anterior than in posterior part of file. Mirror (pl. 10 fig. 65) about twice as long as wide, roughly elliptical with antero-apical margin angulate; fold moderately extending over mirror, outline sinuate.

Fore femur with 0—3, mid femur with 0—1 spines on anteroventral margin. All knee-lobes with a larger dorsal and a smaller ventral spine; occasionally hind knee-lobe with three and fore knee-lobe with one spine. Fore tibia with 0—1, mid tibia with 5—8 dorsal spines on posterior margin; dorso-apical spines usually lacking.

Cercus (pl. 9 fig. 55) incurved, tapering apically to short and distinctly incurved tooth. Subgenital plate (pl. 9 fig. 49) almost four imes as long as smallest width, lateral margin slightly concave in the middle; apex divided by arrowly parabolic incision into pair of lobes with obliquely truncate or slightly sinuate tips. Stylus comparatively long, inserted in lateral half of tip of lobe and usually pointing inward.

General colour green or, less often, brown. Antennae unicolorous or very slightly annulated pale and dark. Palpi from orange via yellowish to pale brown. Head and pronotum unicolorous, but usually with pale orange-yellow stripe running from behind eye toward antero-ventral angle of pronotum, extending over lower margin of pronotal lateral lobe and similarly coloured median stripe from occiput over pronotal dorsum. Lateral stripes may extend over pleurae and median one over cubito-anal areas of fore wing. Fore wings of general colour, immaculate, membrane ranging from little transparent to slightly opaque. Legs of general colour or yellowish, lower and partly inner side of hind femur orange in

green specimens, reddish brown in brown specimens. Knees either of general colour or black from below, or sometimes completely black. Spines of legs with tips black or black basally. Tibiae and tarsi of general colour, tarsi dull brown from below or sometimes completely dark brown.

♀ (pl. 7 figs. 36, 37), larger than male. Wings comparativels long, as in male. Ovipositor with upper margin straight, reaching middle of hind tibia, in dorsal view covered by flexed wings or almost so. Subgenital plate wide, triangular, with median apical emargination. Coloration as in male, basal part of hind margin of fore wing often narrowly orange or yellow.

Variation. It is of particular interest to note that in some specimens the left or right fore and mid tibiae have a posterior dorso-apical spine. This was found in three out of seven females, all from New Britain. Otherwise the specimens agree fully with the material from New Guinea. Whether the instability of this generic character is limited to the population of New Britain is an open question. It is advisable to study the associated males from New Britain to establish the conspecificity with *decoratus*.

Measurements: body ♂ 51—54, ♀ 56—61; fore wing ♂ 52—59, ♀ 63—72; hind femur ♂ 32—37, ♀ 39—42; ovipositor 32-35.

Distribution. The range covers the eastern half of the mainland of New Guinea, extending into some islands near its coast and New Britain (map 2).

Localities: Neu-Guinea (Redtenbacher, 1892; Kästner, 1934); West New Guinea: Sermowai near Hollandia; East New Guinea, East Sepik District: Mushu I. (O'Connor, 1959); Madang District: Madang; Awar Plantation near Bogia (O'Connor, 1959); Baliau Village, Manam I.; Gulf District: Murua Agric. Stat. near Kerema; Northern District: Casey's Plantation near Popondetta; Morobe District: Siki near Finschhafen; Bubia near Lae and Agric. Stat. Bubia; Sattelberg; Siassi I.; West New Britain District: Bitokara C. M. near Talasea; Volupai Plantation near Talasea; Wakanaka Village; Lingalinga Plantation.

Discussion. The species is well-defined and easily distinguished from other *Segestes* species. However, *decoratus* may resemble some species of *Segestidea*, especially *uniformis* (C. Willemse) and *gracilis* (C. Willemse). As noted above, in some specimens of *decoratus* from New Britain dorso-apical spines of fore and mid tibiae are present, which is misleading as to correct generic assignment. In these cases, the following notes may be helpful.

Segestidea uniformis (C. Willemse), which occurs in the Admiralty Is. (Manus District), has the pronotal lateral lobe narrower, its lower margin not yellow but of similar colour as the lobe and the deepest point not beyond but about midway the length. The male subgenital plate (pl. 15 fig. 93) is narrower and the male cercus (pl. 15 fig. 101) shorter. The male stridulatory file is about similar but the number of teeth is smaller (130—140 versus 183—196) and the spacing of he teeth more widely (pl. 16 fig. 109); the mirror is distinctly less covered by the fold (pl. 18 fig. 117). Head, thorax, wings and legs are unicolorous.

Segestidea gracilis (C. Willemse), both in the nominate subspecies (known from New Ireland District) and in *simulatrix* ssp.n. (known from New Britain), has the wings shorter and the ovipositor longer (pl. 12 figs. 77—79, pl. 13 figs. 80—82). The

lower margin of the pronotal lateral lobe is not yellow but of general colour, slightly convex and not at all obtuse-angulately rounded. The male subgenital plate and cercus are smaller (pl. 15 figs. 94, 95, 102, 103). The male stridulatory file in *simulatrix* is of similar shape, but the number of teeth is much smaller (117—139 versus 183-196) and their spacing much wider (pl. 16 fig. 111), while the shape of the file in nominate *gracilis* is quite distinct, its anterior half being much narrower (pl. 16 fig. 110). Head, thorax, legs and wings are unicolorous.

Karny (1931: 72), who had the species not before him, doubted as to the correct arrangement of *decoratus* under *Segestes,* based on the number of spines of the knee-lobes and the presence of styli of the male subgenital plate. The material at hand demonstrates clearly the variability of the number of spines, and the styli are present in the type-species of *Segestes.* Karny's presumption may be, however, of some importance, but for other reasons, viz., the occasional presence of the fore and mid tibial dorso-apical spines. Material recorded under *Sexava* species B by O'Connor (1959) was not available, but certainly refers to *decoratus.* Karny's record of *Segestes unicolor* Redtenbacher from Neu-Pommern (= New Britain) may refer to *decoratus* rather than *unicolor,* which is known only from the West Caroline Island Palau. I have not examined his material.

Segestes stibicki spec. nov.

(pl. 7 figs. 38, 41, pl. 8 figs. 42, 43, pl. 9 figs. 47, 51, 57, pl. 10 figs. 62, 67, map 2)

The species is named after Dr. J. L. Stibick, whose activities urged me to this study.

Material studied: ♂ holo-, 8 ♀ paratypes, labelled: Madang District, Kaironk area, xii.1971-i.1972, J. Menzies (♂ holo-, 6 ♀ paratypes CW; 2 ♀ paratypes DASF) (depositories proposed by Dr. J. Stibick) (holotype lacks both antennae, both fore tibiae, left hind leg, right hind tibia and apex of left fore wing).

Description.

♂ (pl. 7 fig. 38, pl. 8 fig. 42), small. Face rather reclinate. Fastigium of vertex (pl. 9 fig. 47) thorn-like, apex acute, extending far beyond antennal scrobae, reaching third antennal segment (first segment of flagellum), in profile slightly upcurved. Pronotum short; dorsum flattened, weakly rounded laterally, "shoulders" distinct, anterior margin almost and posterior margin quite straight, both with weak median tubercle; lateral lobe about as long as high, lower margin slightly rounded, deepest point at or just before middle of length.

Flexed wings reaching distal end of proximal third of hind tibia. Fore wing narrow, margins about parallel, slightly tapering toward obliquely truncate apex. Stridulatory file (pl. 10 fig. 62) slightly arcuate and fusiform, 2.4 mm long, number of teeth 150, of which anterior 40 fine and covering anterior seventh of file length, other 110 sharp. Width of file reaching maximum 0.26 mm at end of anterior fourth, decreasing posteriorly to about half maximum width. Spacing of teeth slightly increasing posteriorly, comparatively more in anterior part. Mirror (pl. 10

fig. 67) about twice as long as wide, roughly elliptical, fold extending well over mirror, outline convex.

Fore and mid femora with 0—5 spines on anteroventral margin. All knee-lobes with one spine. Fore and mid tibiae with 2-5 dorsal spines on the anterior and 0-3 dorsal spines on posterior margin, no dorso-apical spines.

Cercus (pl. 9 fig. 57) slender, slightly incurved, tapering to a short tooth. Subgenital plate (pl. 9 fig. 51) very narrow, seven times as long as smallest width, apex divided by narrow, about parallel-sided incision into pair of narrow lobes with rounded tips, each with short stylus.

♀ (pl. 7 fig. 41, pl. 8 fig. 43). Apex of flexed wings reaching tip of ovipositor or almost so. The ovipositor slightly upcurved, comparatively short, reaching not quite middle of hind tibia. Subgenital plate wider than long, with slight median apical incision, lobes angulately rounded. Lower margin of ninth tergite extending over upper part of gonangulum (= valvifer), forming shallow groove.

General colour pale brown or pale green. Antennae more or less darkly annulated. Apex and dorsal side of fastigium of vertex, four longitudinal lines over occiput and lateral margins of pronotal dorsum dark brown; sometimes whole occiput, pronotal dorsum and cubito-anal areas of fore wing dark brown. Fore wing with more or less numerous scattered black dots, membrane partly transparent and slightly opaque. Pleurae and coxae with or without some black dots. Lower side of fore femur usually dark brown, fore tibia and mid leg of general colour. Hind femur between bases of knee-lobes, often inner lower margin and sometimes whole lower side, blackish brown. Hind tibia of general colour, lower side often dark brown. Spines brown, tips black, those of hind femur usually completely black.

Measurements: body ♂ 35, ♀ 36—38; fore wing ♂ 36, ♀ 36—41; hind femur ♂ 22 ♀ 24—26; ovipositor 18—20.

Distribution. Known only from the type-series, East New Guinea, Madang District: Kaironk area (map 2).

Discussion. The species is well-defined, although at a first glance it resembles *Segestidea acuminata* (Kästner). The latter species, known in the female sex only, differs in presence of fore and mid tibial dorso-apical spines, larger measurements, shorter fastigium of vertex and wider lobes of the female subgenital plate.

No previous records.

Segestes brevipennis spec. nov.

(pl. 7 fig. 39, pl. 8 fig. 44, pl. 9 figs. 52, 58, pl. 10 fig. 63, map 2)

Material studied: ♂ holotype, labelled: Egemendora, J. Eyma leg., Nieuw Guinea Exp. K.N.A.G. 1939, mid Oct. 1939 (CW) (left mid leg lacking).

Description.

♂ (pl. 8 fig. 44), small. Fastigium of vertex thorn-like, extending well beyond antennal scrobae, just reaching apical margin of scape, slightly upcurved. Pronotal

dorsum flattened in the middle, slightly rounded laterally, "shoulder" well developed; anterior margin slightly convex, posterior margin straight, both margins with weak median tubercle. Pronotal lateral lobe as long as high, lower margin scarcely convex, angles rounded, deepest point about in the middle.

Flexed wings reaching distal end of proximal fourth of hind tibia. Fore wing with margins roughly parallel, scarcely tapering toward obliquely truncated apex; archedictyon well-developed. Stridulatory file slightly arcuate and fusiform (pl. 10 fig. 63), 2.0 mm long, number of teeth 71, of which anterior 17 fine, covering anterior seventh of file length, the other 54 sharp. Width of file strongly increasing in anterior seventh of file length, reaching there its maximum (0.35 mm), decreasing posteriorly to about half maximum width. Spacing of teeth increasing in anterior part. Mirror damaged (not figured), about as in *stibicki*.

Fore and mid femora with 2-3 spines on anteroventral margin. Fore tibia with 3 dorsal spines on anterior margin, posterior margin unarmed. Mid tibia with 2 dorsal spines on anterior and 6 dorsal spines on posterior margin. Fore and mid tibial dorso-apical spines lacking. All knee-lobes with one spine.

Cercus (pl. 9 fig. 58) slightly incurved, tapering apically to a short tooth. Subgenital plate (pl. 9 fig. 52) about six times as long as smallest width, apex divided by wide V-shaped incision into pair of lobes with truncate tips, in the middle of the latter a minute stylus.

General colour dark brown. Antennae slightly annulated pale and dark brown. Fore wing with cubito-anal areas and several scattered points and dots dark brown, hind margin narrowly yellowish brown. Lower side of all legs dark brown, especially of hind femur and hind knee. Spines with tips black.

♀. Unknown.

Measurements: body 34; fore wing 32; hind femur 21.

Distribution. Known only after the type, West New Guinea: Egemendora (map 2).

Discussion. The species comes near *stibicki* from which it is separated as indicated in the key. Further material is needed to establish the reliability of the differences mentioned.

No previous records.

Segestes cornelii spec. nov.

(pl. 6 fig. 31, pl. 7 fig. 40, pl. 9 figs. 46, 50, 56, pl. 10 figs. 61, 66, map 2)

The species is named after my late father, Cornelis J. M. Willemse.

Material studied: ♂ holo-, 3♂ 4♀ paratypes, labelled: Kandep, West. Highl. Distr., New Guinea, 14.ii.1964, J. J. H. Szent-Ivany, on *Sach. robosium* and *Pandanus* (holo-, 1♂ 2♀ paratypes CW; 2♂ 2♀ paratypes DASF) (holotype lacks tips of antennae only).

Description.

♂ (pl. 6 fig. 31), large. Fastigium of vertex (pl. 9 fig. 46) thorn-like, apex acute,

reaching just beyond apical margin of scape, slightly upcurved. Pronotal dorsum slightly flattened in middle, slightly rounded laterally, anterior margin almost, posterior margin quite straight. Pronotal lateral lobe slightly longer than high, lower margin slightly convex, deepest point about in middle.

Flexed wings reaching almost middle, or usually distal end of proximal third of hind tibia. Fore wing wide, margins about parallel, slightly tapering toward a wide, obliquely truncated and rounded apex; archedictyon well-developed, transverse veins poorly developed. Stridulatory file (pl. 10 fig. 61) almost straight, 3.1—3.2 mm long, number of teeth 85—100, of which anterior 25—35 very fine and blunt in anterior seventh of file length, the other 60—70 sharp. Width of file strongly increasing in anterior part, reaching maximum 0.35—0.4 mm at end of proximal fifth of file length, slightly decreasing posteriorly to half maximum width. Spacing of teeth increasing in anterior seventh of file length, sharp teeth about regularly spaced. Mirror (pl. 10 fig. 66) elongate, less than twice as long as wide, trapezoidal, fold much extending over mirror, outline of fold convex, reaching about as far as postero-apical angle of mirror.

Fore and mid femora with 0—3 spines on anteroventral margin. All knee-lobes with one spine. Fore and mid tibiae with 1—6 dorsal spines on anterior and 0—2 on posterior margin, no dorso-apical spines.

Cercus (pl. 9 fig. 56) incurved, tapering apically to a short tooth on inner side of tip. Subgenital plate (pl. 9 fig. 50) rather three times as long as smallest width, apex divided by wide triangular incision into slightly narrower triangular lobes with obtusely pointed tips, the latter representing vestigial styli.

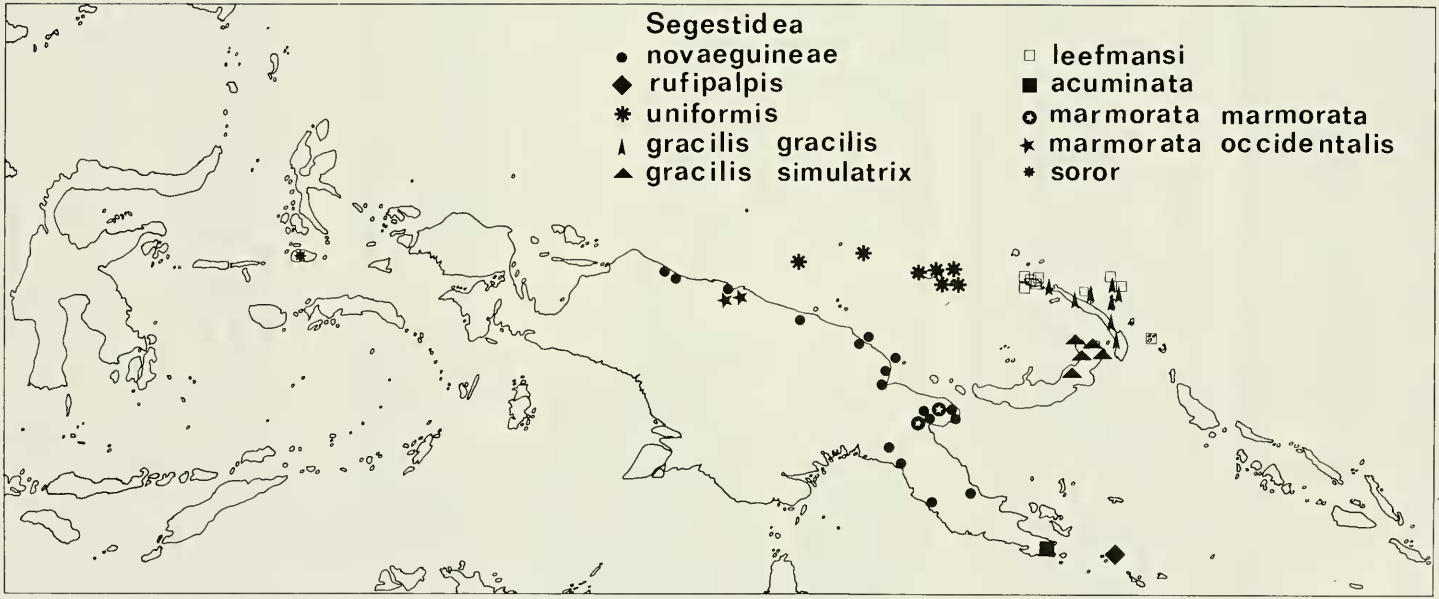
General colour pale and dark brown. Antennae annulated pale and dark brown. Pronotal dorsum sometimes darker brown, or only laterally so. Fore wing unicolorous or inconspicuously mottled dark brown, membrane infuscate; hind margin sometimes narrowly bordered with pale or yellowish brown. Fore and mid legs of general colour, lower side of fore femur often dark brown. Hind femur of general colour with lower side between bases of knee-lobes or whole inner lower margin or whole lower side black. Hind tibia often dark brown from below, except apically. Spines of tibiae and knees brown, tips black, those of femora usually completely black. Tarsi from below dull dark brown.

♀ (pl. 7 fig. 40), slightly larger than male. Ovipositor very slightly upcurved, comparatively short, reaching distal end of proximal third of hind tibia and, in dorsal view, completely covered by flexed wings. Lower margin of ninth tergite slightly extending over gonangulum (= valvifer), forming shallow furrow. Subgenital plate much wider than long, with shallow median apical emargination, lobes widely rounded. General colour paler brown.

Measurements: body ♂ 49—53, ♀ 54—57; fore wing ♂ 57—60, ♀ 56—64; hind femur ♂ 34—36, ♀ 34—37; ovipositor 26—30.

Distribution. Known only from the type-locality, East New Guinea, Western Highlands District: Kandep (map 2).

Discussion. The species is well-defined. This species, together with *brevipennis* and *stibicki* forms the link between *Segestes* and *Segestidea*. The thorn-like fastigium of vertex, the flattened pronotal dorsum and the somewhat truncated



Map 3. Distribution of *Segestidea* species.

apex of fore wing are found also in *Segestidea marmorata* and *acuminata*. No previous records.

Segestidea I. Bolívar, 1903

Segestidea I. Bolívar, 1903: 166.
Eumossula C. Willemse, 1957: 38 (type-species by monotypy: *Eumossula gracilis* C. Willemse, 1957). **Syn. nov.**

Type-species (by Kirby, 1906: 359): *Segestidea princeps* I. Bolívar, 1903 (= *Segestidea novaeguineae* (Brancsik, 1897)).

Segestidea, as now understood in the key to the genera, is a natural group of species characterized by the presence of a posterior dorso-apical spine on fore and mid tibiae (text-fig. 1), in combination with the usual oblique course of Cu1 of the fore wing, i.e. vein reaching the hind margin of the fore wing or almost so at short distance from the wing-base (text-figs. 3, 6, 7).

Up to now, the following species were arranged under *Segestidea*:
princeps I. Bolívar, 1903
marmorata I. Bolívar, 1903
punctipennis I. Bolívar, 1903
soror Hebard, 1922
hanoverana C. Willemse, 1957
insulana C. Willemse, 1957

The generic distinction among Sexavae as considered in this paper, indicates that the following taxa also fit in *Segestidea*:
Sexava femorata C. Willemse, 1940
Sexava leefmansi C. Willemse, 1940
Sexava uniformis C. Willemse, 1940
Segestes acuminatus Kästner, 1934
Sexava rufipalpis C. Willemse, 1966

As will be pointed out, *Eumossula* C. Willemse, 1957, is synonymous with *Segestidea.* As a result, its single species, *Eumossula gracilis* C. Willemse, 1957, should be arranged under *Segestidea.*

Further study of the literature reveals that *Moristus novaeguineae* Brancsik, 1897, is synonymous with *Segestidea princeps.*

For convenience' sake, a survey is here given of all presently recognized species and subspecies in *Segestidea*, noting the new combinations and synonyms:
Segestidea novaeguineae (Brancsik, 1897), comb. nov. (from *Moristus*) = *Segestidea princeps* I. Bolívar, 1903, syn. nov. = *Sexava femorata* C. Willemse, 1940, syn. nov.
Segestidea punctipennis I. Bolívar, 1903
Segestidea soror Hebard, 1922
Segestidea leefmansi (C. Willemse, 1940), comb. nov. (from *Sexava*) = *Segestidea hanoverana* C. Willemse, 1957, syn. nov.
Segestidea uniformis (C. Willemse, 1940), comb. nov. (from *Sexava*) = *Segestidea*

insulana C. Willemse, 1957, syn. nov.
Segestidea gracilis gracilis (C. Willemse, 1957), comb. nov. (from *Eumossula*)
Segestidea gracilis simulatrix ssp. n.
Segestidea rufipalpis (C. Willemse, 1966), comb. nov. (from *Sexava*)
Segestidea marmorata marmorata I. Bolívar, 1903
Segestidea marmorata occidentalis ssp. n.
Segestidea acuminata (Kästner, 1934), comb. nov. (from *Segestes*).

Key to the species and subspecies of *Segestidea*

1. Philippine Is. (known only after ♀ holotype, body 38 mm, fore wing 29 mm, ovipositor 21 mm; fore wing with sparse brown dots) . *punctipennis* I. Bolívar
— The Moluccas, New Guinea, Bismarck Archipelago 2
2. Fastigium of vertex thorn-like, apex acute, reaching at least apical margin of scape 3
— Fastigium of vertex with apex obtusely pointed, shorter, not reaching apical margin of scape 5
3. Fastigium of vertex reaching pedicel (second antennal segment); fore wing wider (known only from ♀ holotype from East New Guinea: Milne Bay; may be synonymous with nominate *marmorata* I. Bolívar) .. *acuminata* (Kästner)
— Fastigium of vertex reaching first segment of flagellum (third antennal segment); fore wing narrower 4
4. Male stridulatory file about 3.0 mm long with about 100 teeth (of which 75 are sharp and apparently functional) (pl. 17 fig. 113) (East New Guinea: Morobe District) ..... *marmorata marmorata* I. Bolívar
— Male stridulatory file of same length, but with about 200 teeth (of which about 175 are sharp and apparently functional) (pl. 17 fig. 114) (West New Guinea: Hollandia area) ..... *marmorata occidentalis* ssp.n.
5. Proximal part of lower and inner side of hind femur solid black or blackish brown 6
— This part of hind femur not black 7
6. Fore wing with solid blackish brown flecks; knee-lobes with one spine (the Moluccas: Obi) (known only from the two type specimens) .. *soror* Hebard
— Fore wing unicolorous or slightly mottled dark brown; knee-lobes usually with two spines (Bismarck Archipelago: New Ireland District) .....
..... *leefmansi* (C. Willemse)
7. Apical part of hind tibia, over a distance as long as hind tarsus, blackish, except for upper side; proximal part of outer side of hind femur with a series of small, black spots, or sometimes with a single large spot, exceptionally without any spot; ventral spines of hind femur unusually widened basally, almost triangular (East New Guinea, extending into northeastern part of West New Guinea) ..... *novaeguineae* (Brancsik)
— Hind tibia unicolorous over whole length; outer side of hind femur always without solid black spots; ventral spines of hind femur hook-shaped as usual
..... 8
8. Lower margin of pronotal lateral lobe angulate, deepest point about at distal

third; male stridulatory file as in pl. 16 fig. 108 (East New Guinea: Louisiade Archipelago, Misima I.) ..... *rufipalpis* (C. Willemse)

— Lower margin of pronotal lateral lobe more convex, deepest point about in the middle; male stridulatory file not as in pl. 16 fig. 108 (Bismarck Archipelago) 9

9. Wings longer, reaching about the middle of hind tibia; ovipositor not extending beyond apex of flexed wings (pl. 11 fig. 74, pl. 12 figs. 75, 76) (Admiralty Is. or Manus District) ..... *uniformis* (C. Willemse)

— Wings shorter, reaching about distal end of proximal fourth of hind tibia; ovipositor extending far beyond apex of flexed wings (pl. 12 figs. 77—79, pl. 13 figs. 80—82) (New Ireland and New Britain) 10

10. Anterior part of male stridulatory file narrow, maximum width reached at the middle of file length (pl. 16 fig. 110) (New Ireland District) ..... *gracilis gracilis* (C. Willemse)

— Anterior part of male stridulatory file wider, maximum width reached far before the middle of file length (pl. 16 fig. 111) (East New Britain District) ..... *gracilis simulatrix* ssp.n.

Segestidea novaeguineae (Brancsik, 1897) comb. nov.

(text-figs. 3, 6, 7, pl. 11 figs. 68—71, pl. 15 figs. 91, 99, pl. 16 fig. 107, pl. 17 fig. 115, map 3)

Moristus novaeguineae Brancsik, 1897: 81.
Sexava novaeguineae; Kirby, 1906: 359.
Sexava coriacea novaeguineae; Karny, 1926: 184.
Segestidea princeps I. Bolívar, 1903: 167; Kästner, 1934: 53. **syn. nov.**
Sexava femorata C. Willemse, 1940: 83, figs. 17, 18; 1961: 109, fig. 14; F. Willemse, 1966: 49 (except 1♀ Manam I.); Lloyd & Gurney, 1975: 47. **syn. nov.**
Sexava species A: O'Connor, 1959: 122.

Material studied: ♀ holotype of *Sexava femorata,* labelled: Halmaheira, *Sexava femorata* n.sp. Det. C. Willemse (CW) (lacking parts of both hind tarsi).

Additional material: Gulf District of Papua, Kerema, ii.1962, sitting on branch of *Coffea canephora* (1♀ CW); Gulf distr., Purari Village, Pawaia no. I., ix—x.1'70, J. I. Menzies (2♀ DASF); Port Moresby, viii.1969 (1♀ CW); Northern District, Popondetta, Casey's Plantation, xi.1960, G. S. Dunn, under the bark of bush trees (1♀ DASF); Popondetta, season 1964, B. J. Brock (1♂ 1♀ BMNH); Boana Mission, Huon Pen., 900 m, 4—5.ix.1956, E. J. Ford Jr., *Sexava femorata* Will. det. C. Willemse (1♂ BPBM); Bubia via Lae, 12.vii.1960, A. Catley, feeds on coconut foliage and on Manila hemp foliage (*Musa textilis*), often parasitized by *Stichotrema dallatorreana* Hofeneder (Strepsiptera) (7♂ 9♀ CW) (partly labelled *Sexava femorata* Will., det. C. Willemse); Madang District, Bogia, i.1960, J. Cox, on coconut fronds (1♂ DASF); Manam I., Baliau Village, 26.xi.1960, J. I. Cox, *Sexava femorata* Will. det. C. Willemse (2♂ 7♀ CW); Karkar I., ii.1969, G. R. Forbes (1♂ DASF); Karkar I., Kulili Plantation, 20 & 24.ix.1958, J. H. Ardley, ex coconut palms (4♂ DASF); Hollandia, viii.1910, Dr. P. N. v. Kampen, Ned. Nw.

Guinea Exp. 1911 (4♂ 3♀ RNH); Hollandia, 24.vii.1938, L. J. Toxopeus, Neth. Ind. Amer. New Guinea Exp. 1938—39 (1 ♂u RNH); Maffin Bay, vi.1944, E. S. Ross (1♂ 1♀ CAS).

The venation of the fore wing and the presence of fore and mid tibial dorso-apical spines of the holotype and other material studied of *Sexava femorata* agree with *Segestidea* as here understood. The species is well-defined by a number of characters, some quite typical. Several of these characters, including the typical ones, are mentioned in the description of Bolívar's *Segestidea princeps*: "Antennae — late albido-annulatae — Caput pone oculos fascia pallida obliqua, parum distincta — Pronotum — lobis deflexis inferne pallidis — Elytra — venis transversis campi postradialis elevatiusculis, prope venas radiales subcallosus, flavis — Femora — postica — subtus carnea, extus tertia parte basali maculis fuscis seriatis ornata, carinis inferioribus — spinis validis armata — Tibiae posticae apice nigra. Tarsi atri.". Also the measurements and the locality of *princeps* (Simbang, Huon Gulf) are covered by *femorata* material before me. Unfortunately the holotype (unique ♀) (TMA) has been lost (Steinmann, in litt. 3.xii.1975; V. Llorente, in litt. 9.i.1976). Moreover, the species was badly known, a second female only having been recorded by Kästner (1934: 53) who gave no further comments except for its measurements. Because the typical characters of Bolívar's species fit only *femorata*, both taxa should be considered synonymous.

A similar case offers the comparison of the present material with Brancsik's *Moristus novaeguineae*. That species was known only from the female holotype from Friedrich Wilhelmshafen (TMA). Again the holotype has been lost (Steinmann, in litt. 3.xii.1975) and further taxonomically reliable records are not known. The species was discussed by Karny (1926: 184). Although that author neiher had the type nor other material before him, he considered it a variety of *Sexava coriacea*: "da sie [*novaeguineae*] sich von dieser [*coriacea*] nach der Original Beschreibung im wesentlichen eigentlich nur durch etwas geringere Dimensionen und die die Elytren nicht überragende Legeröhre unterscheidet". However, Karny's conclusion is not correct. In Brancsik's short description it is said: "tibiis posticis apice tarsisque omnibus subtus fuscus". This feature disagrees with any *Sexava* species and fits only *princeps* = *femorata*. Also the measurements of *novaeguineae* agree with the latter rather than with *Sexava nubila* or *coriacea*. Moreover, the type-locality of Brancsik's species is within the range of *princeps* = *femorata* and not by far within that of *Sexava*. When comparing the green coloured specimens before me with Redtenbacher's monography of the Mecopodinae (1892: 201), as most probably did Brancsik (1897), the context of the description of *novaeguineae* is perfectly clear. Based on so much evidence, I propose to synonymize *Sexava femorata* and *Segestidea princeps* with *Moristus novaeguineae*. The last, being the oldest available name, is given priority and the generic assignment leads to the new combination: *Segestidea novaeguineae* (Brancsik).

Redescription.

♂ (pl. 11 fig. 68), large. Fastigium of vertex obtusely pointed, often with shallow median furrow and slightly fissate apex, reaching to, or slightly extending beyond,

antennal scrobae, not by far to apical margin of scape. Pron slightly flattened medially, strongly rounded laterally, anterior margin slightly, posterior margin less convex to almost straight, "shoulders" indistinct. Pronotal lateral lobe about as long as high, lower margin angulate, deepest point distally of the middle of lobe length, this point sometimes produced posteriorly.

Flexed wings reaching distal end of proximal third to middle of hind tibia. Fore wing wide, long, margins in proximal half about parallel, beyond middle or in distal third evenly tapering toward narrowly rounded apex (text-fig. 3); costal area with numerous parallel obliquely transverse veins, most of these and the transverse veins of radial and medial areas, slightly incrassate; archedictyon well-developed; membrane slightly opaque. Venation of bases of left and right fore wing as in text-figs. 6 and 7. Stridulatory file (pl. 16 fig. 107) fusiform, scarcely arcuate, 4.2—5.0 mm long, number of teeth 175—190 of which anterior 40—50 fine and less sharp, other 135—150 sharp and apparently functional. Width of file increasing to maximum 0.5—0.6 mm in anterior third of file length, but slightly decreasing again posteriorly. Spacing of teeth about regular except for more closely set anterior ones. Mirror (pl. 17 fig. 115) one-and-a-half times as long as wide or shorter, about trapezoid; fold strongly inflated in basal half, extending well over mirror, outline convex basally, running obliquely toward postero-apical angle.

Fore and mid femora usually unarmed, sometimes with 1—3 spines in apical part of anteroventral margin. Hind femur, except near base, with series of strong ventral spines on both margins, spines widened basally and almost triangular in profile. All knee-lobes with two spines, sometimes posterior or seldom also anterior knee-lobe of mid leg and more often of fore leg, with one spine. Fore tibia with 0—1, mid tibia with 4—6 dorsal spines on posterior margin, both tibiae with a posterior dorso-apical spine.

Cercus (pl. 15 fig. 99) incurved, tapering apically to a short, hook-shaped tooth. Subgenital plate (pl. 15 fig. 91) 5—6 times as long as smallest width, margins about parallel, apex divided by V-shaped or parabolic incision into pair of lobes, tips of the latter obliquely truncated and with styli.

General colour bright green or brown. Antennae widely and distinctly annulated pale yellow and dark brown, except basally. Palpi of general colour, yellowish or orange. Often whitish fascia from behind eye, extending over genae, lower margin of pronotal lateral lobe and pleurae. Outer side of hind femur often with pale and dark transverse stripes, basal third with a series of solid black or dark brown spots, sometimes fused into one or few larger ones. Lower side of hind femur of general colour or reddish. Apical part of hind tibia, for a distance about as long as hind tarsus, black or blackish brown, dorsally usually paler brown or of general colour. All tarsi from below dull black or blackish brown. Spines of femora black, those of hind femur usually with basal part reddish brown. Spines of tibiae black, except for dorsal ones of hind tibia, which are of general colour with tips black.

♀ (pl. 11 figs. 69—71) larger than male. Ovipositor straight or almost so, reaching distal end of proximal third to middle of hind tibia, not or very slightly extending beyond apex of flexed wings. Subgenital plate wide, triangular, with median apical emargination and rounded lobes. Coloration as in male.

Variation. Measurements vary, but comparative length of wings and ovipositor are about equal. The contrast between the generally bright green or dark coloured specimens is conspicuous. The black spots of the basal third of the outer side of the hind femur are lacking in very few specimens.

Measurements: body ♂ 50—62, ♀ 56—62; fore wing ♂ 58—70, ♀ 75—88; hind femur ♂ 39—45, ♀ 46—55; ovipositor 35—42.

Distribution. The range covers the eastern half of the mainland of New Guinea, extending onto some islands near the coast and into the northern part of western New Guinea (map 3).

Localities: West New Guinea: Maffin Bay; Takar (O'Connor, 1959); Hollandia. East New Guinea: East Sepik District: Maprik (O'Connor, 1959); Madang District (O'Connor, 1959): Friedrich Wilhelmshafen (Brancsik, 1897); Stephansort (Kästner, 1934); Bogia; Manam I. (O'Connor, 1959), Baliau Village (F. Willemse, 1966); Karkar I. (O'Connor, 1959), Kulili Plantation; Morobe District: Simbang (Bolívar, 1903); Sattelberg; Bubia (F. Willemse, 1966); Boana Mission (C. Willemse, 1961); Northern District: Popondetta, Casey's Plantation; Central District: Port Moresby; Gulf District: Kerema; Purari Village.

Discussion. The species is well-defined. Easily recognizable are the blackish apical part of the hind tibia, the black dots on the basal outer side of the hind femur and the strong spines of the hind femur. The locality label of the holotype of *femorata* reads "Halmaheira", which appears doubtful. The material recorded under *Sexava* species A by O'Connor (1959) is not at hand. However, his records can refer only to *novaeguineae* and are included in the locality list and on the distribution map.

Segestidea rufipalpis (C. Willemse, 1966) comb. nov.

(pl. 11 figs. 72, 73, pl. 15 figs. 92, 100, pl. 16 fig. 108, pl. 17 fig.116, map 3)

Sexava rufipalpis C. Willemse, 1966: 1, figs. 1, 2; F. Willemse, 1966: 49.

Material studied: type-series, ♂ holo-, ♀ allo-, 2♂ paratypes, labelled: Liak Village, Misima Island, Milne Bay District, of Papua, Feb. 1962; feeding on the foliage of *Cocos nucifera*, coll. D. I. Murrie, *Sexava rufipalpis* sp.n. Det. C. Willemse 1962, appropriate type-labels (CW) (holotype lacks right antenna, right fore leg, both mid tibiae and tips of both hind tarsi).

For a general description, compare original one. Differs from the type-species as follows.

More robust but not larger (pl. 11 figs. 72, 73). Apex of flexed wings not reaching beyond proximal third of hind tibia and almost beyond tip of ovipositor. Fore wing with apex narrowly rounded, almost pointed. Male stridulatory file (pl. 16 fig. 108) distinctly fusiform, almost straight, about 4 mm long, number of teeth 95—105 of which anterior 15—20 very fine, blunt, closely set and weakly sclerotized, arranged over anterior ninth of file length, the other 80—90 sharp and strongly sclerotized. Width of file strongly increasing in anterior ninth, from there

but slightly and reaching maximum of 0.5 mm at distal end of anterior fourth of file length, decreasing posteriorly to about one-fourth of maximum width. Spacing of nine anterior teeth very close, of remaining part of file about regular and much more widely spaced than in type-species. Mirror (pl. 17 fig. 116) less trapezoid, more elongate-elliptical, fold extending less over mirror and less inflated. Spines of hind femur not widened basally but hook-like as usual. Male cercus and subgenital plate as in pl. 15 figs. 92, 100.

General colour green. Antennae scarcely annulated. Palpi orange. Whitish fascia of head and thorax scarcely indicated. Pronotal dorsum, on each side, with a minute black point in the impressed posterior transverse sulcus. Legs, including apical part of hind tibia and outer side of hind femur and tarsi, of general colour. Dorsal spines of hind tibia orange brown, tips black, other spines of legs completely black or almost so.

Measurements: body ♂ 47—52, ♀ 60; fore wing ♂ 57—64, ♀ 70; hind femur ♂ 39—40, ♀ 48; ovipositor 39.

Distribution. Known only from the type-locality, Papua, Milne Bay District: Louisiade Archipelago, Misima I. (map 3).

Discussion. The species is well-defined. The male stridulatory file is quite characteristic. The shape of the pronotal lateral lobe and the male abdominal terminalia are much as in *novaeguineae*.

Segestidea uniformis (C. Willemse, 1940) comb. nov.

(pl. 11 fig. 74, pl. 12 figs. 75, 76, pl. 15 figs. 93, 101, pl. 16 fig. 109, pl. 18 fig. 117, map 3)

Sexava uniformis C. Willemse, 1940: 81, figs. 19, 20 (only Lou I.).
Segestidea insulana C. Willemse, 1957: 41, pl. 4 right; 1961: 111 (only Los Negr[it]os); F. Willemse, 1966: 48 (only paratypes of *insulana* and Wululu I.). **syn. nov.**

Material studied: ♀ holotype of *Sexava uniformis*, labelled: Lou Il. '32, coll. Böhler, *Sexava* n. sp. det. Karny, *Sexava uniformis* nov. sp. Det. C. Willemse, Type (NMB) (discoloured, both fore legs, right middle leg and left fore wing lacking).

Type-series of *Segestidea insulana:* ♂ holotype, labelled: New Guinea Territory of Papua, Pak Island, 1954, T. H. Ardley, *Segestidea insulana* nov. spec. det. C. Willemse, type (BMNH); paratypes: similar locality label (1♂ 1♀ BMNH; 1♀ CW); Lou I., 1954, T. H. Ardley (1♂ 1♀ BMNH); Lorengau Manus I., 1954, T. H. Ardley (1♂ CW; 1♀ BMNH) (with appropriate identification and type-labels).

Additional material: Manus District, 24—28.ii.1974, J. Pippett (1♂ DASF); Manus District, Sala Plantation, 4.iii.1954, J. Ardley (1♀ DASF); Manus I., 5.v.1932, J. L. F. (1♂ 2♀ BMNH); Manus, 1932, N. E. H. Caldwell (1♂ BMNH); Manus I., Lei Village near Lorengau, 29.vi.1956, J. Szent-Ivany, feeding on fronds of coconut palms (1♂ 1♀ DASF); Manus I., Tulo Plantation N. coast, 19.i.1962, on *Cocos nucifera*, J. Szent-Ivany & P. Hermann (3♂ DASF); Manus I., Bundalis R. C. Mission, plantation N.coast, 19.i.1962, on mature coconuts, brought down by smoke, J. Szent-Ivany & P. Hermann (2♂ DASF); Los Negros Is., Momote

Airstrip, 26.ii.1960, defol. young coconut palms, J. Szent-Ivany (1♂ DASF); Los Negros, xi.1945, Wagner & Grether, *Segestidea insulana* Will. det. C. Willemse (1♂ BPBM); Pak I., 7.i.1971, P. R. Jones, on coconuts (3♂ 4♀ DASF); Hermit Is., Maron I., 10.vii.1961, ex coconut palms, J. H. Ardley (5♂ 5♀ CW); Wululu Isl., Agita Plantation, ix.1960, Rede Lean, severe damage to coconut foliage, *Segestidea insulana* Will. det. C. Willemse (6♂ 1♀ CW).

Sexava uniformis was described after two females, the holotype from Lou I., the paratype from Rook I. The latter represents another species and is discussed under *gracilis simulatrix*. Comparison of the holotype of *uniformis*, the type-series of *insulana* and other material at hand reveals clearly that they belong to one species, to be assigned to *Segestidea*.

For a general description the reader is referred to the original descriptions of *Sexava uniformis* and *Segestidea insulana*. The species differs from the type-species as follows.

Smaller, more slender (pl. 11 fig. 74, pl. 12 figs. 75, 76). Pronotal lateral lobe narrower, lower margin obtusely angulate, deepest point about in the middle. Flexed wings reaching middle of hind tibia or almost so, in dorsal view covering ovipositor completely. Ovipositor straight, tip reaching distal end of proximal third of hind tibia or slightly longer. Fore wing much narrower, comparatively less tapering toward comparatively more widely rounded apex; archedictyon less well-developed; transverse veins in costal area less numerous and less regular, not incrassate; membrane more or less transparent. Male stridulatory file (pl. 16 fig. 109) fusiform, slightly arcuate, 3.4—4.0 mm long, number of teeth 130—140, of which anterior 35—50 fine, less sharp, and others (at least 85—95), sharp and apparently functional. Width of file increasing and reaching maximum 0.48—0.50 mm at distal end of anterior third of file length, slightly decreasing again posteriorly to about half maximum width. Spacing of teeth increasing in anterior third, functional teeth about regularly set. Mirror (pl. 18 fig. 117) about twice as long as wide, elongate-elliptical, fold distinctly less extending over mirror and but weakly inflated, outline straight and about parallel to hind margin of wing. Number of spines on legs about as in type-species, ventral spines of hind femur not widened, but hook-like as usual. Male cercus shorter (pl. 15 fig. 101) and very slightly incurved apically. Male subgenital plate (pl. 15 fig. 93) narrow, lateral margins often slightly concave, margins of V-shaped apical incision often slightly crenulated, styli comparatively longer and slightly incurved.

General colour green or brown. Antennae not or scarcely annulated. Head, thorax, wings and all legs of general colour. Fore wing sometimes with hind margin narrowly dark brown or yellowish. Spines of legs of general colour, tips black. Tarsi from below dull dark brown.

Measurements: ♂ 43—52, ♀ 42—57; fore wing ♂ 57—65, ♀ 62—74; hind femur ♂ 32—41, ♀ 34—44; ovipositor 26—33.

Distribution. As far as known, the range covers the north-western Bismarck Archipelago: Admiralty Is. (Manus District) (map 3).

Localities: Manus I.: Lorengau (C. Willemse, 1957); Lei Village; Tulo Plantation; Bundalis R. C. Mission; Sala Plantation; Lou I. (C. Willemse, 1940; 1957);

Pak I. (C. Willemse, 1957); Los Negros I. (C. Willemse, 1961), Momote Airstrip; Hermit Is., Maron I.; Wululu Is., Agita Plantation (C. Willemse, 1966).

Discussion. The species is well-defined, but the characters are not as easily recognizable as in some other species of the genus. Confusion is possible with nominate *Segestidea gracilis* and its subspecies *simulatrix*, and with *Segestes decoratus*. Distinction from the latter is discussed under that species. Both subspecies of *gracilis* have shorter wings and longer ovipositor, the latter extending far beyond the apex of the flexed wings (pl. 12 figs. 77—79, pl. 13 figs. 80—82). Moreover the lower margin of the pronotal lateral lobe is more convex, the male cercus more incurved (pl. 15 figs. 102, 103), the male subgenital plate wider (pl. 15 figs. 94, 95), and the styli shorter. The male stridulatory file in nominate *gracilis* has a quite different shape (pl. 16 fig. 110), while the file in *simulatrix* is less arcuate and differs in slightly wider spacing of the teeth (pl. 16 fig. 111).

Segestidea gracilis (C. Willemse, 1957) comb. nov.

Among the material before me, two taxa can be recognized, based on consistent differences in the stridulatory file, as indicated in the key above. This may be evidence of genetic discontinuity in which case the taxa should be considered species. However, by lack of more supporting evidence, I prefer to consider them subspecies. One occurs in New Ireland and agrees with *gracilis*, the other subspecies is known from New Britain and named *simulatrix* ssp.n.

Segestidea gracilis gracilis (C. Willemse, 1957) comb. nov.

(pl. 12 figs. 77—79, pl. 15 figs. 94, 102, pl. 16 fig. 110, pl. 18 fig. 118, map 3)

Eumossula gracilis C. Willemse, 1957: 37, figs. 1—3, pl. 2; 1958: 122 (only New Ireland); F. Willemse, 1966: 48 (do.).
Segestidea insulana; C. Willemse, 1961: 110 (only New Ireland); F. Willemse, 1966: 48 (do.).

Material studied: type-series of *Eumossula gracilis*, ♂ holo-, 1♂ 1♀ paratypes, labelled: New Guinea, Terr. of Papua, New Ireland, 1954, J. H. Ardley, *Eumossula gracilis* n.g. n.sp. Det. C. Willemse, appropriate type-labels (holo-, 1♂ paratype BMNH; 1♀ CW) (holotype lacks right antenna and some claws).

Additional material (all New Ireland District): Lihir I., Londolovit Plantation, on coconut fronds, 20.vii.1955, J. Szent-Ivany (3♂ CW); Lihir Group, Masahet I., on coconut palms, 21.vii.1955, J. Szent-Ivany (2♂ 2♀ CW); Lihir Group, Mahur I., on coconut palms, 22.vii.1955, J. Szent-Ivany (1♂ 2♀ CW); SW New Ireland, Gilingil Plantation, 2 m, 17.vii.1956, J. L. Gressitt (1♂ CW; 1♂ BPBM) (part of all this material with label: *Segestidea insulana* Will. Det. C. Willemse); New Ireland, Tigak D.A.S.F., 1. viii.1971, on coconut, J. Sumbak (1♀ DASF); Tabar I., Teripax Plantation, 23.vii.1955, on *Cocos nucifera*, J. Szent-Ivany (1♂ DASF); Lihir Group, Lataul Village, 15.xi.1968, D. F. O'Sullivan (1♂ DASF); New Ireland District, Namatanai, Matakan Plantation, 15.iii.1965, on *Theobroma cacao*, J. M. Adams

(1♂ 1♀ DASF); New Ireland District, Maramakas Plantation, 7.ii.1954, J. H. Ardley (1♂ DASF).

A study of the type-series and other available material reveals clearly that the monotypic *Eumossula* perfectly fits *Segestidea* and that its species, *gracilis*, is well-defined.

For a general description the reader is referred to the original one. The species differs from the type-species as follows.

Smaller (pl. 12 figs. 77—79). Lower margin of pronotal laterâ lobe slightly convex, not at all angulate. Wings shorter, in flexed position extending just beyond hind knee, not beyond proximal fourth of hind tibia, not by far reaching tip of ovipositor. Fore wing much narrower, slightly tapering toward narrowly rounded apex; archedictyon well-developed; transverse veins less numerous, less regular and not incrassate. Male stridulatory file (pl. 16 fig. 110) narrowly fusiform, slightly arcuate, 3.8—4.2 mm long, number of teeth 156—175 of which at least 50—70 cover the atenuated, narrow anterior third of file length, while others (about 100) are arranged over remainder of file. Width of file increasing but slightly all over anterior half, just before or in middle of file length increasing more abruptly, reaching maximum of 0.4—0.5 mm and decreasing again slightly in posterior fourth of file. Spacing of teeth slightly and gradually increasing in anterior half, from there slightly decreasing posteriorly. Mirror (pl. 18 fig. 118) wide elliptical, fold not strongly inflated, outline of the latter almost straight of slightly sinuate and but moderately extending over mirror. Number of spines of legs as in type-species. Ventral spines of hind femur hook-like, as usual. Male cercus (pl. 15 fig. 102) shorter, more robust. Male subgenital plate (pl. 15 fig. 94) comparatively shorter, about four times as long as smallest width. Ovipositor long, reaching middle of hind tibia or almost so, upper margin straight.

General colour pale green or brown. Antennae not or scarcely annulated. Head, thorax, fore wings and legs of general colour, spines with tips black.

Measurements: body ♂ 47—54, ♀ 48—59; fore wing ♂ 48—54, ♀ 54—63; hind femur ♂ 37—42, ♀ 40—44; ovipositor 36—40.

Disribution. The range of the nominate subspecies covers the New Ireland District of the Bismarck Archipelago (map 3).

Localities: New Ireland (C. Willemse, 1957); Gîingil Plantation (C. Willemse, 1961; F. Willemse, 1966); Maramakas Plantation; Namatanai, Matakan Plantation; Tigak; Lihir Is., Lataul Village; Londolovit Plantation (C. Willemse, 1958; F. Willemse, 1966); Masahet I. (C. Willemse, 1958; F. Willemse, 1966); Mahur I. (C. Willemse, 1958; F. Willemse, 1966); Tabar I., Teripax Plantation.

Discussion. The nominate subspecies is characterized by short wings, long ovipositor and the shape of the male stridulatory file. As to the latter, it is noted that this character is rather uniform throughout the studied males of nine different localities.

Distinction with *Segestidea uniformis* and *Segestes decoratus* is discussed under these species.

Segestidea gracilis simulatrix subsp. nov.

(pl. 13 figs. 80—82, pl. 15 figs. 95, 103, pl. 16 fig. 111, pl. 18 fig. 119, map 3)

Sexava uniformis C. Willemse, 1940: 82, figs. 19—20 (Rook I. only).
Segestidea insulana; C. Willemse, 1961: 110 (New Britain only); F. Willemse, 1966: 48 (do.).
Eumossula gracilis; C. Willemse, 1958: 122 (New Britain only); F. Willemse, 1966: 48 (do.).

Material studied: ♂ holotype, labelled: New Britain, Gazelle Peninsula, Lowl. Agr. Exp. Station Keravat, 26.v.1954, J. Szent-Ivany, on the fronds of African oil-palms *Elea guineensis, Eumossula gracilis* Will. Det. C. Willemse 1958 (CW) (both antennae, left fore tibia and parts of tarsi lacking).

Paratypes: similar to holotype (1 ♀ CW), similar locality and identification label, viii.1958, G. S. Dunn, on *Cocos nucifera* (1 ♂ 2 ♀ CW), similar locality, 60 m, 11.ix.1955, J. L. Gressitt, *Segestidea insulana* Will. Det. C. Willemse (1 ♂ 2 ♀ BPBM; 1 ♀ CW); New Britain, Gazelle Peninsula, Bainings St. Paul's, 350 m, 9. ix. 1955, J. L. Gressitt, *Segestidea insulana* Will. Det. C. Willemse (13 ♂ 4 ♀ BPBM; 1 ♂ CW); New Britain, Gazelle Peninsula, Malaguna, 4.iii.1971, feeding on foliage of *Cocos nucifera*, A. Gameta & J. Guguna (3 ♂ 2 ♀ DASF); New Britain, Gaulim Peninsula, 23.v.1955, *Segestidea insulana* Will. det. C. Willemse (1 ♀ BPBM); New Britain, Sio, N. coast, 600 m, 24.vii.1956, *Segestidea insulana* Will. det. C. Willemse (1 ♂ BPBM); New Britain, Ti, Nakagai, 28.vii.1956, E. J. Ford, *Segestidea insulana* Will. det. C. Willemse (1 ♂ BPBM); E. N. B. District, 30.xii.1974, on coconut leaf, D. Tago (1 ♀ DASF); New Britain, Kokope East, Gunanua Plantation, 27.iv.1968, on oil palm, R. Abijah (1 ♀ DASF); East New Britain, Sumsum Plantation, 31.iii.1971, *Cocos nucifera*, D. F. O'Sullivan (1 ♀ DASF); Rook I., Umboi, 1930, H. Hediger, *Sexava uniformis* nov. spec. Det. C. Willemse, cotype (1 ♀ NMB).

Description.

Differing from nominate subspecies as follows (pl. 13 figs. 80—82). Male stridulatory file (pl. 16 fig. 111) slightly fusiform, scarcely arcuate, 3.8—4.2 mm long, number of teeth 117—139 of which anterior 20—40 fine and less sharp covering anterior fifth of file length, other teeth, about 100, arranged over remaining of file. Width of file stronger, increasing in anterior fifth, reaching maximum of 0.4—0.5 mm at distal end of proximal third of file length, from there slightly decreasing posteriorly. Spacing of teeth increasing in anterior third, about regular in remaining of file. Mirror (pl. 18 fig. 119) slightly more elongate. Male cercus (pl. 15 fig. 103) slightly more incurved.

General colour green or brown, sometimes slightly mottled darker brown, especially in fore wing.

Measurements: body ♂ 46—52, ♀ 53—59; forewing ♂ 45—50, ♀ 53—58; hind femur ♂ 32—36, ♀ 38—40; ovipositor 36—38.

Distribution. As far as known confined to New Britain (and Rook I. ?) (map 3).

Localities: East New Britain: Sumsum Plantation; Malaguna; Kokopo, Gunanua Plantation; Bainings St. Paul's (C. Willemse, 1961; F. Willemse, 1966); Keravat

Lowlands Agric. Exper. Station (C. Willemse, 1958, 1961; F. Willemse, 1966); New Britain: Ti, Nakagai; Sio, N. coast; Gaulim Peninsula; Rook I.

Discussion. This subspecies is characterized by its resemblance with the nominate subspecies in combination with its clearly distinct male stridulatory file. As in the nominate subspecies, it is noted that the file of the studied males from five different localities is quite uniform. Whether the slight differences of the male cercus, subgenital plate and mirror (pl. 15 figs. 95, 103, pl. 18 fig. 119) are reliable characters, is not certain by lack of sufficient material. The paratypic *Sexava uniformis* female from Rook I. is discoloured and badly damaged. Without the male, identification is uncertain, although it can be said that the specimen disagrees with *uniformis* and *Segestes decoratus*. Judging from the length of the wings and the ovipositor and the shape of the pronotal lateral lobe, it fits *gracilis*. As to the range of the subspecies of the latter, *simulatrix* may be expected to occur in Rook I. rather than the nominate form.

Distinction between *gracilis simulatrix, Segestidea uniformis* and *Segestes decoratus* is discussed under the last two species.

Segestidea leefmansi (C. Willemse, 1940) comb. nov.

(pl. 13 figs. 83, 84, pl. 14 fig. 85, pl. 15 figs. 96, 104, pl. 16 fig. 112, pl. 18 fig. 120, map 3)

Sexava leefmansi C. Willemse, 1940: 83, fig. 21—22.
Segestidea hanoverana C. Willemse, 1957: 39, pl. 3, 4 left; F. Willemse, 1966: 48. **syn. nov.**

Material studied: type-series of *Sexava leefmansi*: ♂ holotype, labelled: Lawongai N.H. xi.31 coll. Bühler, *Sexava* sp. n. det. H. Karny, *Sexava leefmansi* nov. sp. adet. C. Willemse, type (discoloured, left fore leg and right fore tibia lacking); paratypes: similar labels, cotype (1♂ 1♀); Namaoroso N.H. xi.31 coll. Bühler, similar identification labels, cotype (1♂ 1♀) (all NMB).

Type-series of *Segestidea hanoverana*: ♂ holo-, 2♂ 3♀ paratypes, labelled: New Guinea, Terr. of Papua, New Hanover, 1954, J. H. Ardley, *Segestidea hanoverana* nov. sp. Det. C. Willemse, appropriate type-labels (holotype lacks left mid leg, BMNH; 1♂ 2♀ BMNH; 1♂ 1♀ CW).

Additional material (all New Ireland District): Feni Island Group, Anir Plantation, on *Cocos nucifera*, x.1959, G. S. Dunn (1♀ 1♀ CW); Tabar Group, Tatau Island, Teripax Plantation, defoliating coconuts, severe outbreak, 23.vii. 1955, J. Szent-Ivany (2♂ 1 ♀ CW; 1♂ DASF); New Ireland Eastcoast, Metakabul Plantation, on coconuts, 21.viii.1955, J. Szent-Ivany (1♂ 1♀ CW) (all labelled *Segestidea hanoverana* Will. Det. C. Willemse); New Hanover, Umbukul, 15.iii. 1971, resting on fronds of *Cocos nucifera*, B. Dionsil (2♀ DASF); Lihir Group, Masahet Island, 21.ix.1955, J. Szent-Ivany, on old coconut palm (1♂ DASF); Lihir Group, Mahur Island, 21.vii.1955, on young palm, J. Szent-Ivany (1♂ DASF); New Hanover, Baikep Village garden, 21.viii.1955, J. Szent-Ivany, on young

coconut palms (1 ♀ DASF); New Hanover, Tioputuk & Metevol, 11—15.iii.1971, B. Dionsil, resting on fronds of *Cocos nucifera* (1 ♀ DASF); New Hanover, 5.v.1932, coconuts (1 ♂ 1 ♀ BMNH).

Comparison of the types of *Sexava leefmansi, Segestidea hanoverana* and other material at hand reveals clearly that they are conspecific and should be arranged under *Segestidea.*

A general description can be found in the original ones of *leefmansi* and *hanoverana.* The species differs from the type-species as follows.

Slightly smaller (pl. 13 figs. 83, 84, pl. 14 fig. 85). Lower margin of pronotal lateral lobe from regularly to obtuse-angularly rounded, deepest point about in middle. Flexed wings reaching from distal end of proximal third to middle of hind tibia, in female to tip or just beyond tip of ovipositor. Fore wings long and wide, margins about parallel, in apical third hind margin more and fore margin less tapering towards widely rounded apex; archedictyon well-developed; transverse veins less numerous, in costal area irregular. Male stridulatory file (pl. 16 fig. 112) narrowly fusiform, slightly arcuate, 3.0—3.2 mm long, number of teeth 132—145 of which about 50—70 cover anterior third of file length. Width of file but very slightly and gradually increasing in anterior third of file length, reaching maximum of 0.3 mm near middle of file, from there slightly decreasing posteriorly. Spacing of teeth slightly and gradually increasing in anterior third, about regular over remaining of file length. Mirror (pl. 18 fig. 120) elongate-elliptical, about 3 mm long and 2 mm wide, fold moderately developed and inflated, its outline convex to slightly sinuate. Spines of legs as in type-species, ventral ones of hind femur hook-like as usual. Male cercus (pl. 15 fig. 104) much less incurved, near apex abruptly narrowing to short, strong, incurved tooth. Male subgenital plate (pl. 15 fig. 96) narrow, 6—7 times as long as smallest width, slightly widening apically, lateral margins slightly concave, margins of apical incision often crenulated. Ovipositor with upper margin straight or almost so, reaching from distal end of proximal third to middle of hind tibia.

General colour from pale to dark brown, seldom green. Antennae slightly annulated pale and dark brown. Head and thorax of general colour. Fore wing usually mottled with darker brown areas and dots, membrane infuscated. Legs of general colour, basal part of lower and inner side of hind femur solid black. Spines brown, tips black, tarsi from below dull dark brown.

Measurements: body ♂ 46—53, ♀ 51—59; fore wing ♂ 59—65, ♀ 72—75; hind femur ♂ 40—42, ♀ 41—45; ovipositor 30—34.

Distribution. As far as known, confined to the New Ireland District of the Bismarck Archipelago (map 3).

Localities: New Hanover (C. Willemse, 1957); Lawongai (C. Willemse, 1940); Namaoroso (C. Willemse, 1940); Tioputuk and Metevol; Umbukul; Baikep; New Ireland, Metakabul Plantation (F. Willemse, 1966); Feni Is., Anir Plantation (F. Willemse, 1966); Tabar Is., Tatau I., Teripax Plantation (F. Willemse, 1966); Lihir Group, Masahet I.; Mahur I.

Discussion. The species is well-defined by a number of characters. The coloration of the hind femur is a conspicuous feature. The male stridulatory file resembles that of *gracilis simulatrix,* but is shorter and narrower.

In the original description of *leefmansi*, the type-localities were recorded from the New Hebrides. Apparently this was a mis-interpretation for the abbreviation N.H. on the locality-label. Direct information given by Prof. Bühler, who collected the specimens (via Dr. Baroni-Urbani, in litt. 24.xi.1975) confirms that the specimens originate from New Hanover. As far as known, Sexavae do not occur in the New Hebrides.

The species lives together with *Segestidea gracilis gracilis.*

Segestidea acuminata (Kästner, 1934) comb. nov.

(pl. 14 figs. 86, 87, map 3)

Segestes acuminatus Kästner, 1934: 50, figs. 18—19.

Material studied: ♀ holotype, labelled: Coll. Br. v.W. Milne Bay (Neu Guinea) Staud., *Segestes* sp. determ. Karny, 21.673, *Segestes acuminatus* Käst. ♀ A. Kästner det., Typus (NMW) (both antennae, right fore tibia, tarsi of four anterior legs, both cerci, tip of right middle tibia lacking and tips of both fore wings slightly damaged).

The holotype (pl. 14 figs. 86, 87) agrees fairly well with the original description except for two details. The intact left fore and mid tibiae bear a posterior dorso-apical spike, both apparently overlooked by Karny who studied the specimen, and by Kästner when describing his species. This character disagrees with *Segestes* and assigns the species to *Segestidea.* Further it can be seen that the apex of the fore wing, although slightly damaged, is truncated rather than narrowly rounded.

Other marked characters are the thorn-like fastigium of the vertex, which extends just beyond the scape. The pronotal dorsum is somewhat flattened in the middle, slightly rounded laterally, fore and hind margins each bearing two lateral and one median obtuse tubercles. Lower margin of pronotal lateral lobe obtuse-angularly rounded, deepest point just before the middle. The flexed wings reach the tip of the ovipositor, which reaches as far as the middle of the hind tibia. The venation of the fore wing agrees with that of the genus. Ovipositor is comparatively short and slightly upcurved. The subgenital plate is wider than long, slightly incised apically with widely rounded lobes. Fore and mid femora with 5—6 spines on the anteroventral margin. All knee-lobes with one spine. Fore and mid tibiae with 3 dorsal spines on the anterior margin, posterior margin of fore tibia unarmed, that of the mid tibia with 3 spines, dorso-apical spines not included. General colour is rusty brown. The apex of the fastigium of the vertex and a lateral stripe over the pronotal dorsum blackish. Fore wing with scattered dark brown points, caused by dark brown membrane between the archedictyon.

Measurements: body ♂ 38; fore wing 47; hind femur 28; ovipositor 20.

Distribution. Known only from the holotype, Papua: Milne Bay (map 3).

Discussion. The species is badly defined. It comes near *marmorata* (see below).

The distinction indicated in the key appears not reliable. Topotypic material, including the male, is needed to establish the differences between both taxa.

Segestidea marmorata I. Bolívar, 1903

On account of similar considerations as given for *gracilis*, two subspecies in *marmorata* can be recognized: nominate *marmorata* and *marmorata occidentalis* ssp.n.

Segestidea marmorata marmorata I. Bolívar, 1903

(pl. 15 figs. 97, 105, pl. 17 fig. 113, pl. 18 fig. 121, map 3)

Segestidea marmorata I. Bolívar, 1903: 167.
Segestes acuminatus; C. Willemse, 1961: 108, figs. 18, 19.

Material studied: E. New Guinea, Bubia, Markham Valley, 50 m, 19.ix.1955, J. L. Gressitt, *Segestes acuminatus* Kästner Det. C. Willemse 1960 (1 ♂ BPBM).

The species was described after a single female from: Sattelberg, Golfe Huon, Biró, 1898. Until now, no further material became available. Unfortunately the holotype has been lost (TMA) (Steinmann, in litt. 3.xii.1975) and other material could not be traced (IEM; V. Llorente, in litt. 9.i.1976). The male before me agrees fairly well with Bolívar's description and its locality is not far from the type-locality. Preliminarily, the specimen is assigned to nominate *marmorata*. It differs from the type-species as follows.

Redescription.

♂ smaller, more slender (C. Willemse, 1961: fig. 19). Fastigium of vertex (C. Willemse, 1961: fig. 18) thorn-like, apex acute, slightly upcurved, extending far beyond the antennal scrobae, reaching apical margin of scape. Pronotal dorsum somewhat flattened medially, slightly rounded laterally, anterior margin almost, posterior margin quite straight, both margins with weak median tubercle. Pronotal lateral lobe about as long as high, lower margin obtusely angulate, deepest point about in the middle.

Flexed wings reaching just beyond middle of hind tibia. Fore wing long and narrow, margins about parallel, very slightly narrowing towards wide, obliquely truncated and slightly emarginate apex; archedictyon well-developed; transverse veins not incrassate, ill-defined and but few in number. Stridulatory file of the male at hand (pl. 17 fig. 113) partly torn off from the membrane, fusiform, slightly arcuate, 2.9 mm long, number of teeth 105 of which anterior 30 fine and about blunt, covering anterior seventh of file length, remaining 75 teeth sharp. Width of file strongly increasing in anterior part, reaching maximum 0.4 mm in middle of file, decreasing posteriorly. Spacing of teeth very narrow in anterior part, strongly increasing towards middle of file, from there about regular and scarcely decreasing posteriorly. Mirror (pl. 18 fig. 121) roughly trapezoid, about 3 mm long and 2 mm wide, fold extending well over mirror with strongly inflated basal half,

its outline convex basally, running obliquely towards postero-apical angle of mirror.

Fore and mid femora with 3 spines on apical half of anteroventral margin. All knee-lobes with one spine. Fore tibia with 3 and 6, mid tibia with 2 and 3 dorsal spines on posterior and anterior margins, respectively, dorso-apical spines not included. Spines of hind femur hook-like. Cercus (pl. 15 fig. 105) slender, incurved and slightly tapering apically. Subgenital plate (pl. 15 fig. 97) small, narrow, about four times as long as smallest width, apex divided by V-shaped incision into pair of narrow lobes, styli present.

General coloration mottled pale and dark brown. Fastigium of vertex from above, pronotal dorsum and cubito-anal areas of fore wing, dark brown. Antennae slightly annulated. Fore wing distinctly mottled pale and dark brown, combined with smaller and larger areas of transparent membrane; hind margin narrowly bordered yellowish white in proximal half. Inner side of hind femur castaneous brown. Spines of legs black, dorsal spines of hind tibia brown, tips black.

♀, after Bolívar: Lamina subgenitalis postice rotundata, medio obtuse angulato-emarginata. Ovipositor subrectus, pallidus, apice magis infuscatus.

Measurements (♀ after Bolívar): body ♂ 46, ♀ 45; fore wing ♂ 59, ♀ 59; hind femur ♂ 31, ♀ 33; ovipositor 24.

Distribution. Known only from East New Guinea: Morobe District (map 3).

Localities: Sattelberg (Bolívar, 1903); Bubia.

Discussion. The nominate subspecies is well-defined, although variation is insufficiently known. It links *Segestidea* with *Segestes*, which is apparent when comparing *marmorata* with *Segestes stibicki, brevipennis* and *cornelii*. As pointed out under *acuminata*, that species might be synonymous with nominate *marmorata*.

Segestidea marmorata occidentalis subsp. nov.

(pl. 14 figs. 88—90, pl. 15 figs. 98, 106, pl. 17 fig. 114, pl. 18 fig. 122, map 3)

Material studied. ♂ holotype, labelled: Neth. New Guinea, Dojo, iv.1958, G. den Hoedt (CW); paratypes: Hollandia, Ned. Nieuw Guinea Exp. 1911 Dr. P. N. v. Kampen (2♂ 2♀ RNH) (holotype lacks both antennae and part of some tarsi, paratypes discoloured and more damaged).

Description.

♂ (pl. 14 figs. 88, 89). Differs from nominate subspecies in larger number of teeth of male stridulatory file (pl. 17 fig. 114). The latter of similar length, 2.9—3.1 mm, number of teeth about twice as large, 198—203, maximum width of file slightly smaller, 0.3 mm, spacing of teeth twice as narrow. Mirror (pl. 18 fig. 122) of right male fore wing, abdominal terminalia (pl. 15 figs. 98, 106) and coloration about as in nominate subspecies.

♀ (pl. 14 fig. 90). Flexed wings reach middle of hind tibia, extending beyond tip of ovipositor. Ovipositor short, slightly upcurved, reaching about distal end of proximal third of hind tibia. General coloration more uniform.

Measurements: body ♂ 39—47, ♀ 36—40; fore wing ♂ 56—57, ♂ 51—52; hind femur ♂ 31—33, ♀ 30—31; ovipositor 20—21.

Distribution. Known only from the type-series, West New Guinea: Hollandia and nearby Dojo (map 3).

Discussion. More material is needed to establish precisely the distinction between *occidentalis* and nominate *marmorata*. Although the number of teeth of the male stridulatory file in *Sexava coriacea* varies in a similar degree, that number is defined by the length of the file, while the spacing of the teeth is about similar. This is not the case in the *marmorata* material, which justifies the subspecific distinction between the nominate form and *occidentalis*.

No previous records.

Segestidea soror Hebard, 1922

Segestidea soror Hebard, 1922: 178, pl. 16 figs. 3, 4.

Known only from the typical pair (ANSP).

Distribution. The Moluccas: Obi (Hebard, 1922).

Discussion. I have before me a male with the tip of abdomen badly damaged. It is labelled: Dodinga, Halmaheira, Bernstein (CW). As far as can be judged, the specimen agrees with Hebard's species. Especially the shape of the fore wing with obliquely truncated apex fits *soror* perfectly. The stridulatory file is 3.9 mm long, slightly arcuated and fusiform, number of teeth 79 of which the anterior 28 fine and less sharp than the remaining 51 ones. Width of the file reaching maximum of 0.47 mm in anterior fourth of file length, decreasing posteriorly to about a third of the maximum width. Spacing of the teeth very fine and increasing in anterior third, decreasing posteriorly to about half widest spacing. Mirror twice as long as wide, elliptical; fold extending well over the mirror, outline almost straight and parallel to the hind margin of the wing.

Segestidea punctipennis I. Bolívar, 1903

Segestidea punctipennis I. Bolívar, 1903: 168.

Known only from the ♀ holotype (IEM).

Distribution. The Philippine Is.: Irocin, Albay (Bolívar, 1903).

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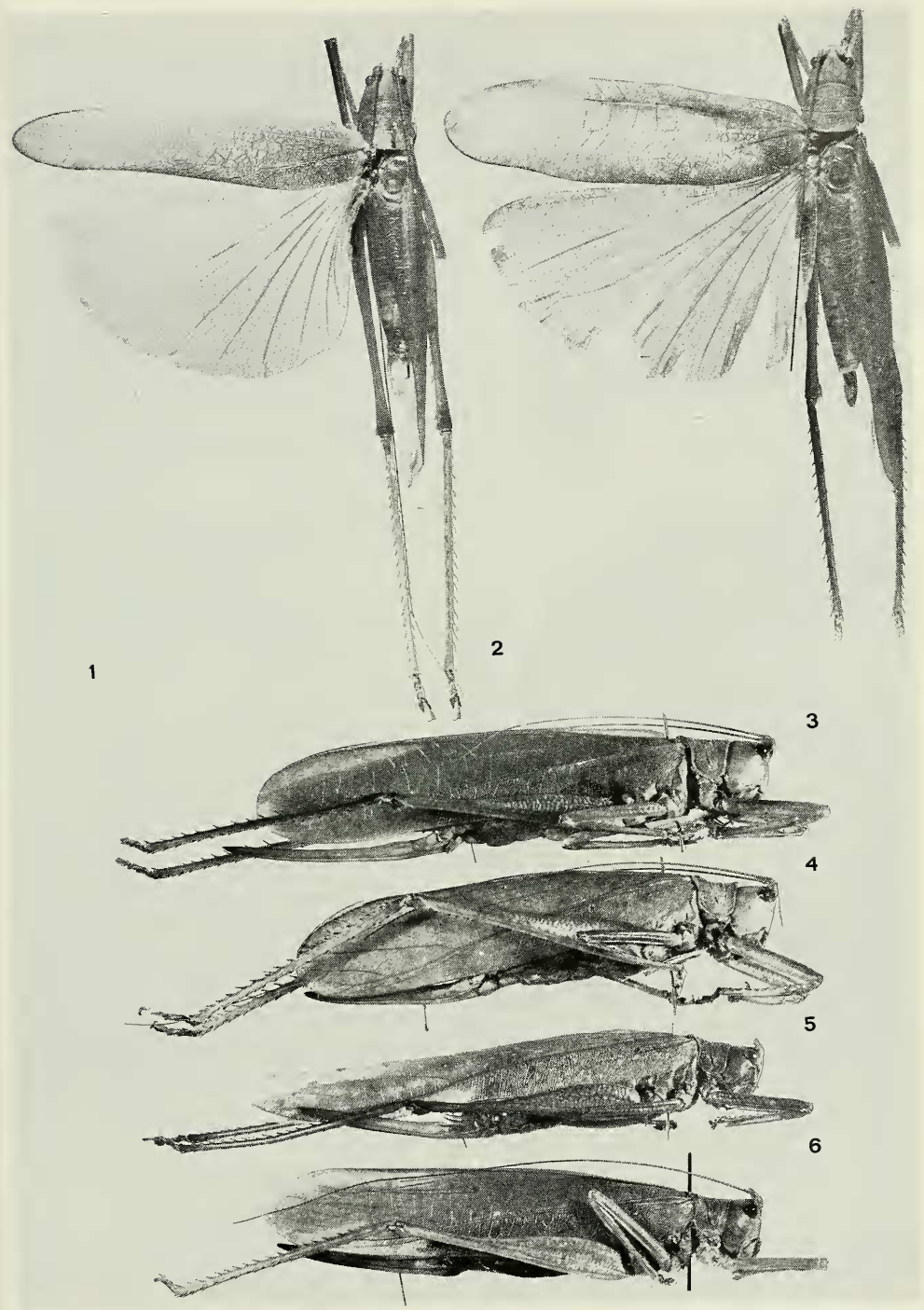
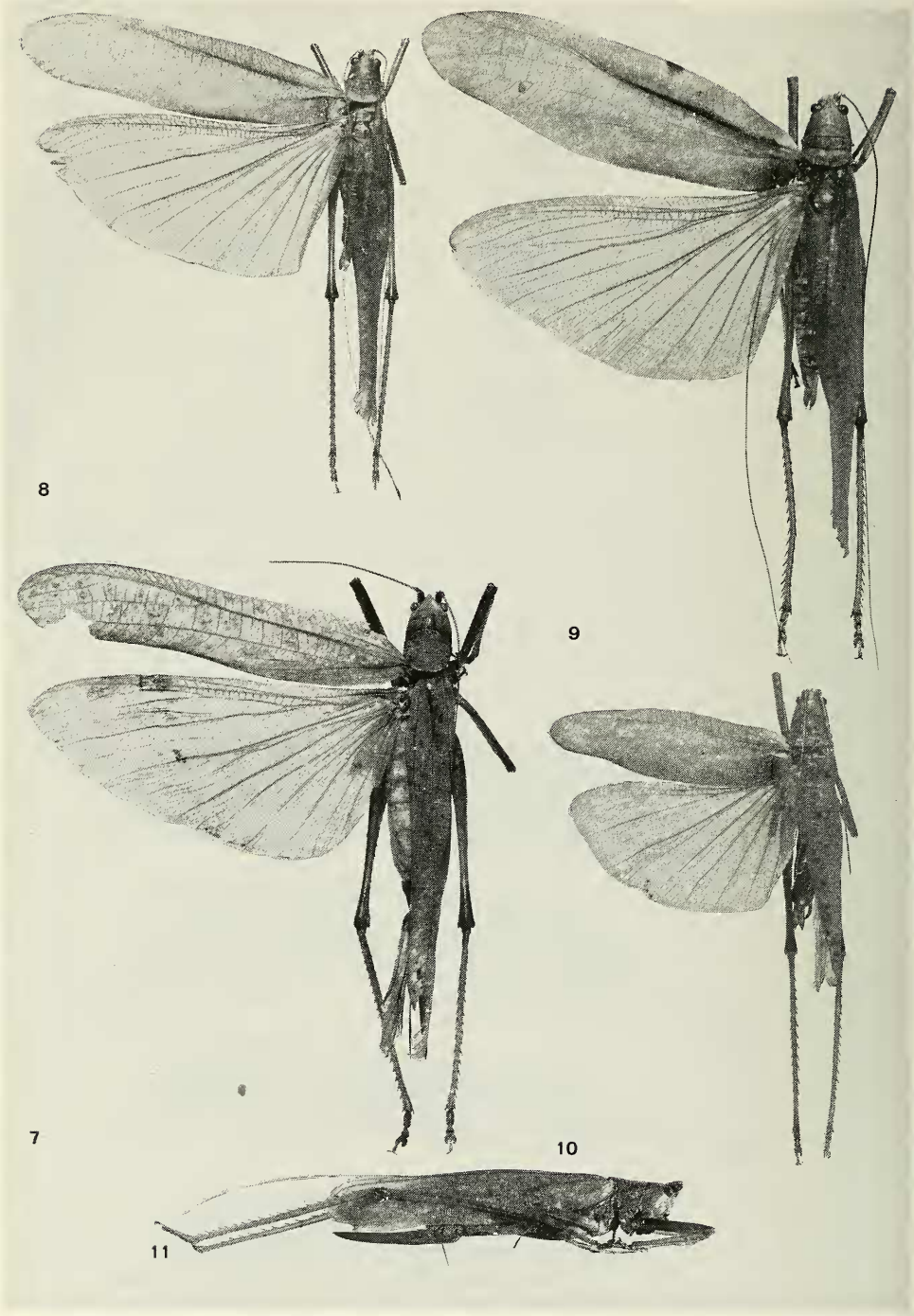
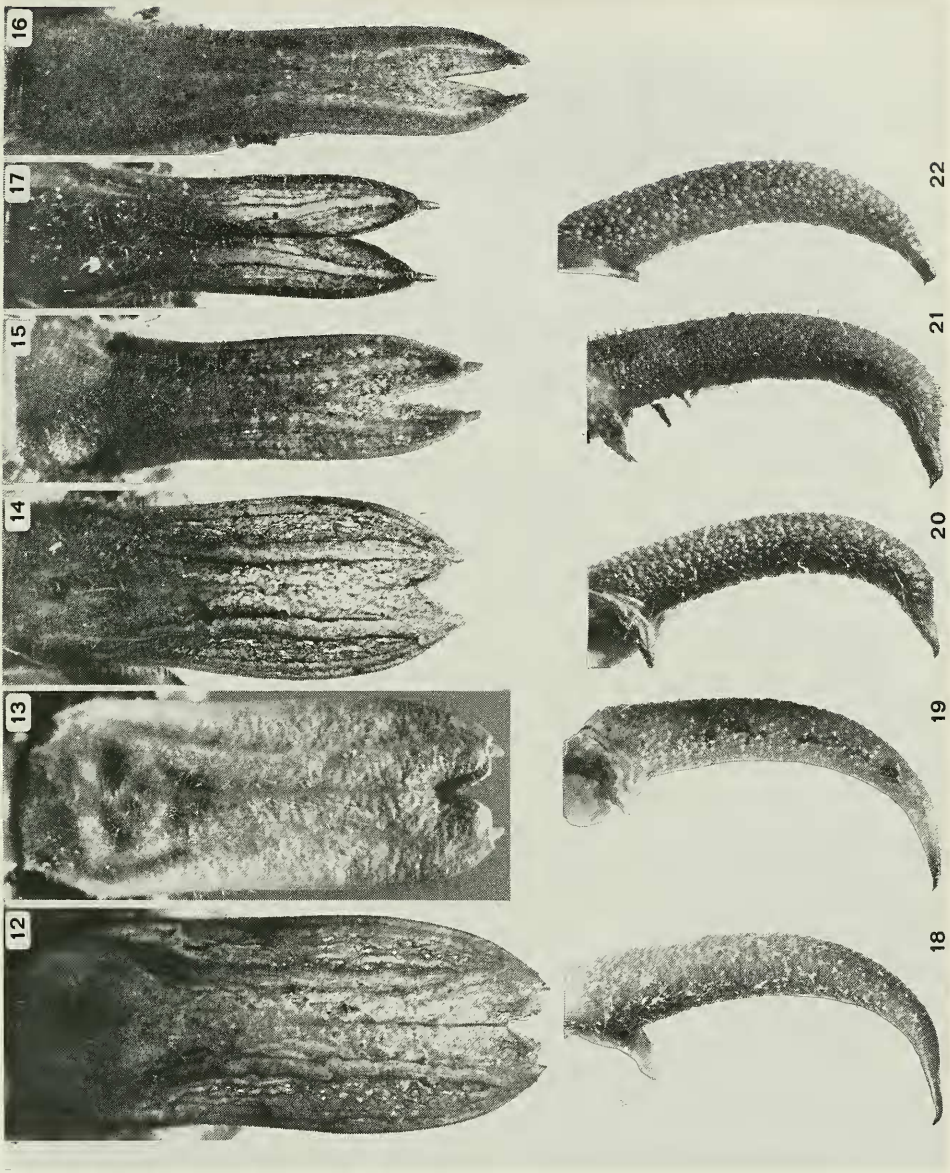


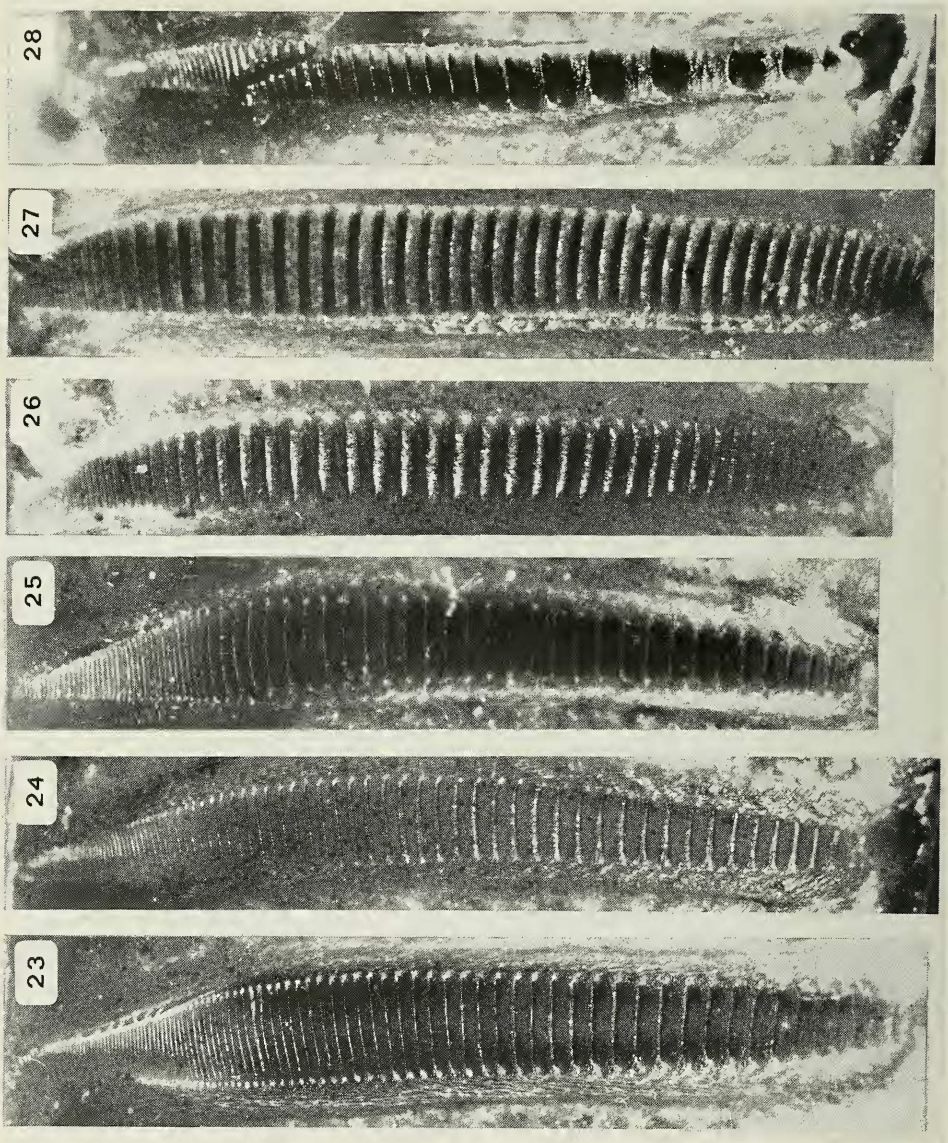
Figs. 1—4. *Sexava coriacea* (L.): 1, ♂ (Ambon, CW); 2, ♂ (Obi, CW); 3, ♀ (Obi, paratype *S. grandis*, CW); 4, ♀ (Sangihe I., ITZ). Figs. 5—6. *S. nubila* (Stål): 5, ♀ (Sorong, CW); 6, ♀ (Talaud Is., BMNH).



Figs. 7—9. *Sexava nubila* (Stål): 7, ♀ (holotype); 8, ♂ (Mindiptana, CW); 9, ♂ (Beo, Talaud Is., RNH).
Figs. 10—11. *S. karnyi* Leefmans: 10, ♂ (Ampana, ITZ); 11, ♀ (Posso, ITZ).

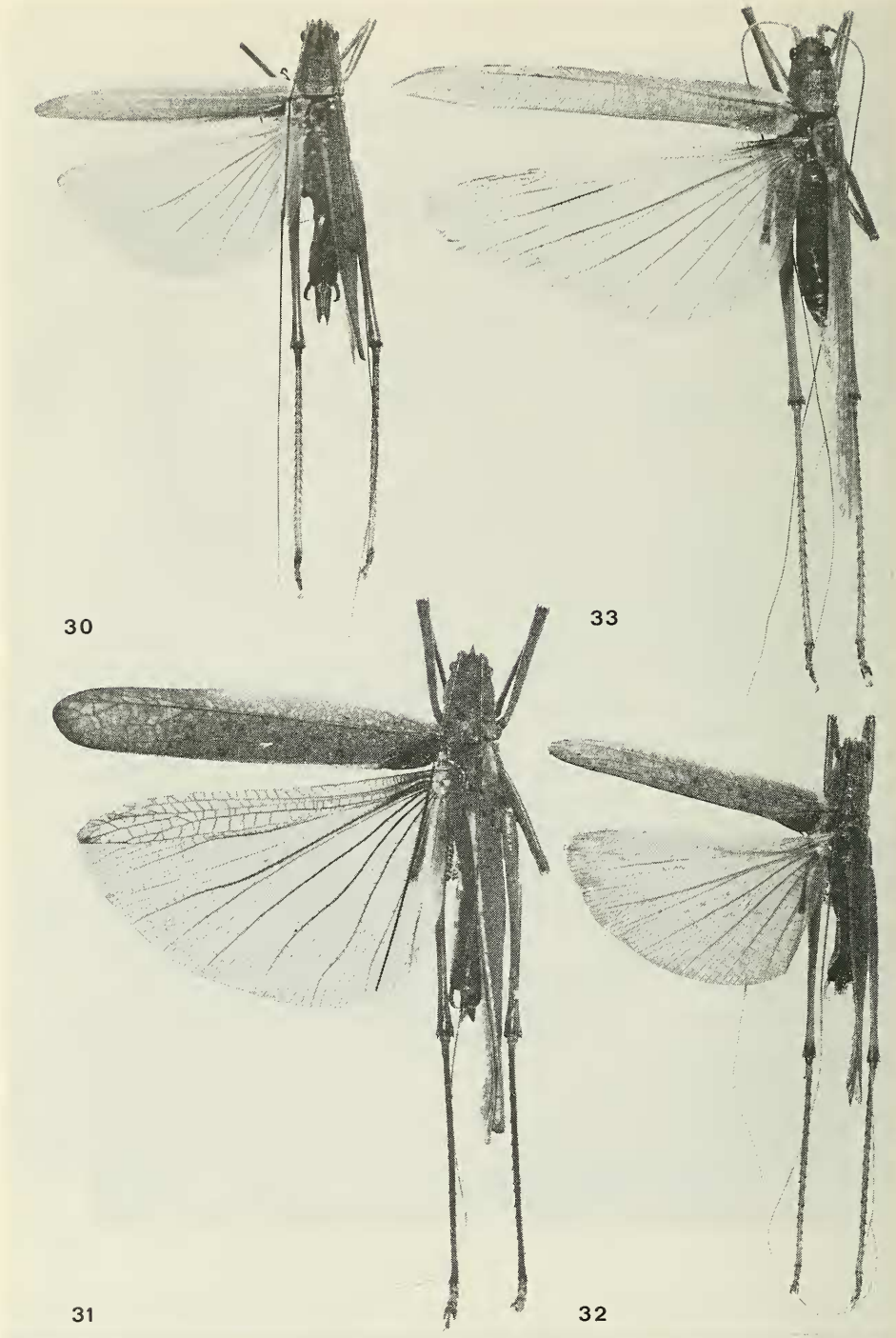


Figs. 12—22. *Sexava* species: 12—17, male subgenital plate: 12—14, *coriacea* (L.) (12, Obi, CW; 13, Ambon, RNH; 14, Halmaheira, CW); 15—16, *nubila* (Stål) (15, Sorong, CW; 16, Talaud Is., ITZ); 17, *karnyi* Leefmans (Ampana, ITZ); 18—22, male cercus: 18—19, *coriacea* (L.) (18, Ambon, RNH; 19, Sangihe Is., BMNH); 20—21, *nubila* (Stål) (20, Mindiptana, CW; 21, Talaud Is., ITZ); 22, *karnyi* Leefmans (Ampana, ITZ).

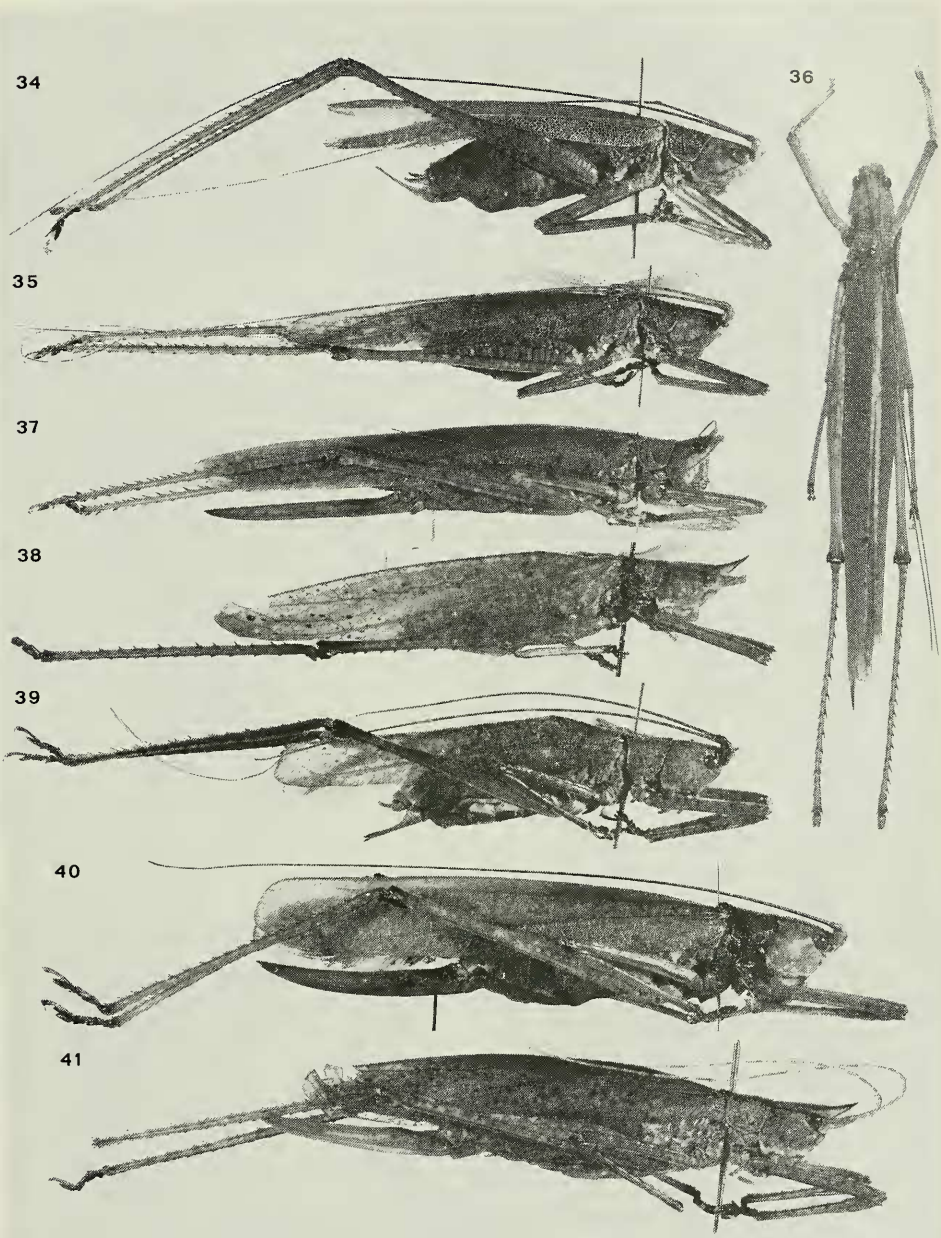


Figs. 23—28. *Sexava* species, male stridulatory file: 23—25, *coriacea* (L.) (23, Obi, CW; 24, Halmaheira, CW; 25, Ambon, RNH); 26—27, *nubila* (Stål) (26, Koor, CW; 27, Talaud Is., ITZ); 28, *karnyi* Leefmans (Ampana, ITZ).

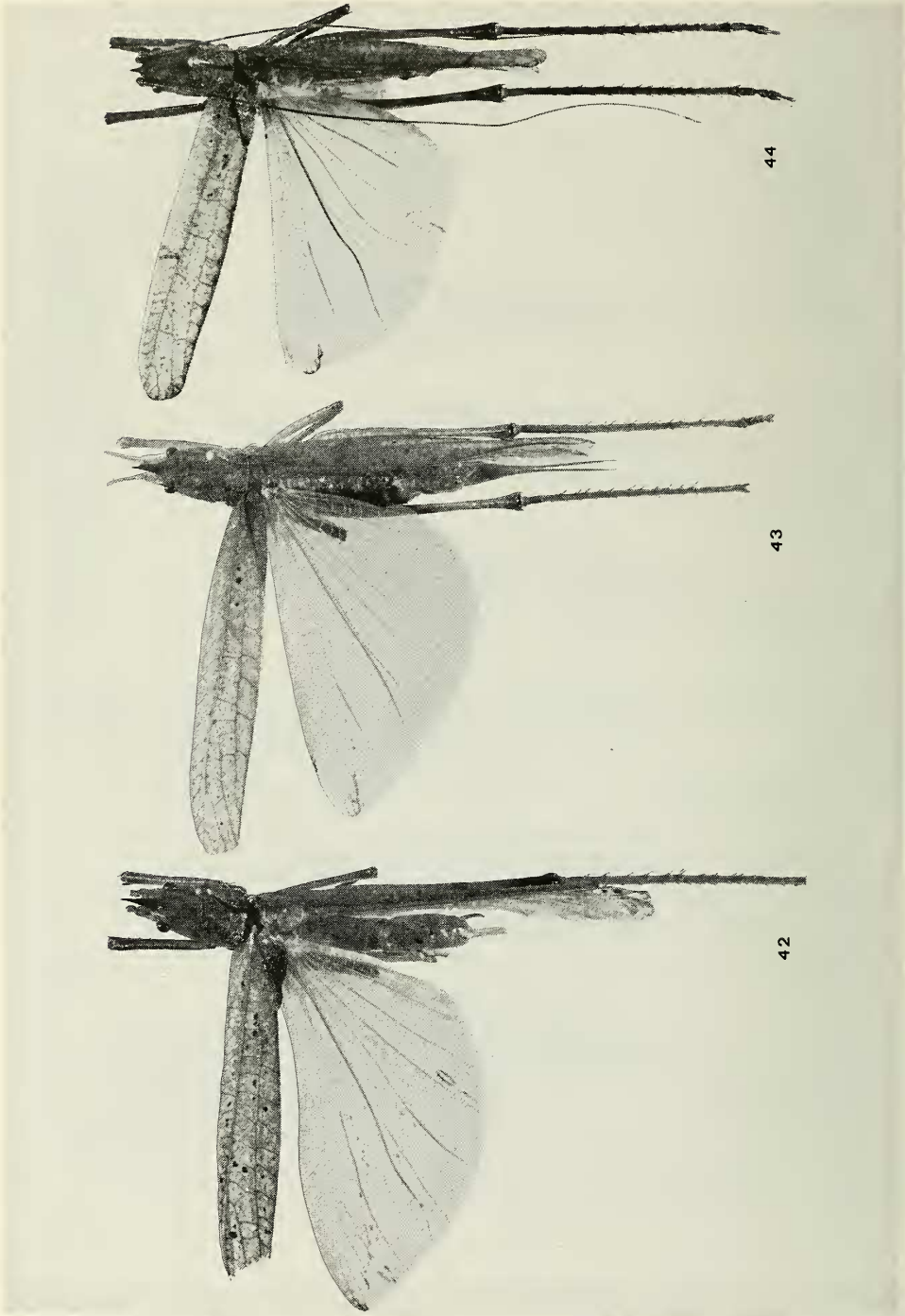
Fig. 29. *Sexava coriacea* (L.), stridulatory area of right male fore wing (Obi, CW).



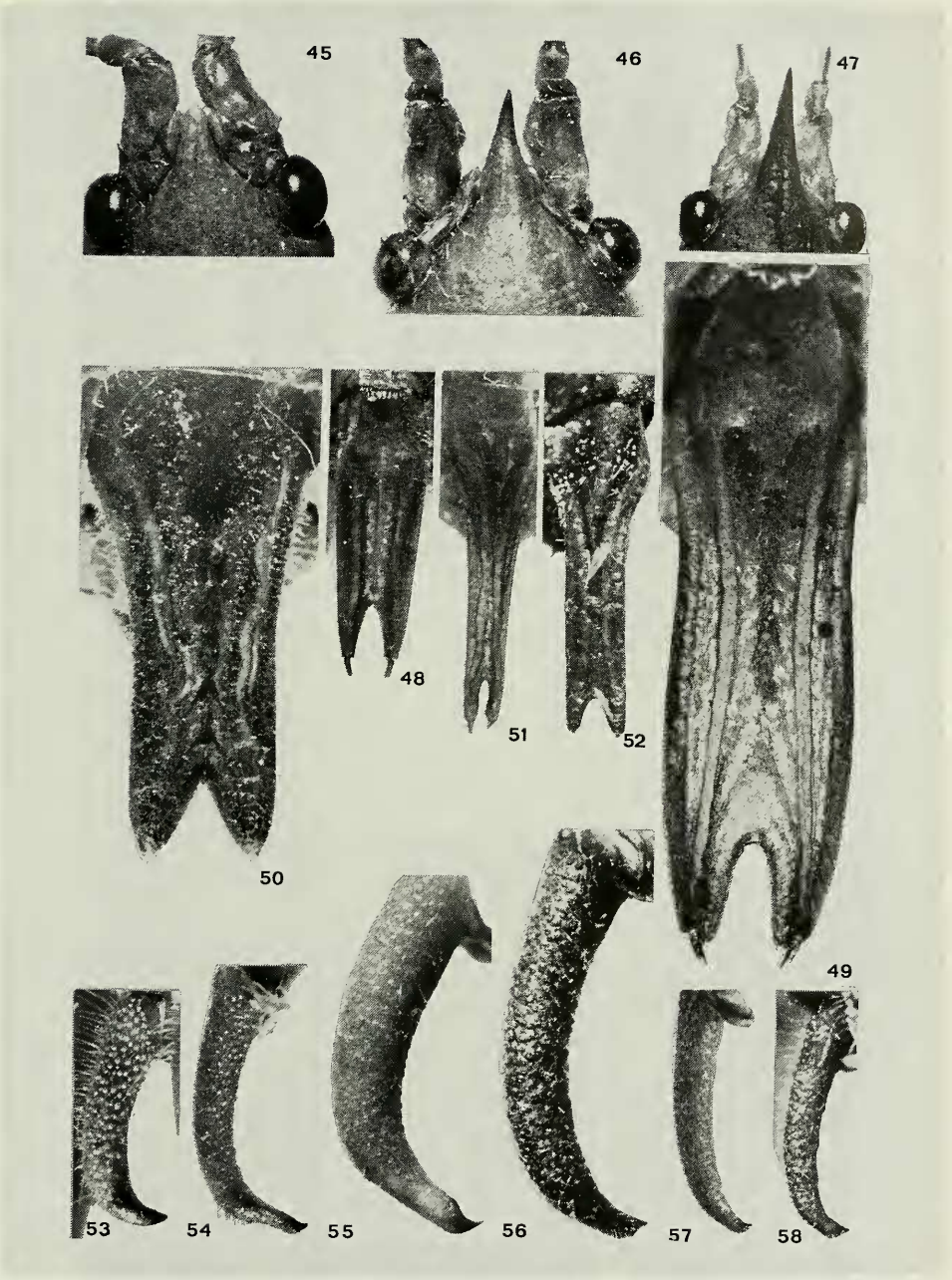
Figs. 30—33. *Segestes* species: 30, *vittaticeps* Stål (♂ lectotype); 31, *cornelii* sp.n. (♂ holotype); 32, *unicolor* Redtenbacher (♂ Koror, Palau, CAS); 33, *decoratus* Redtenbacher (♂ Bubia, CW).



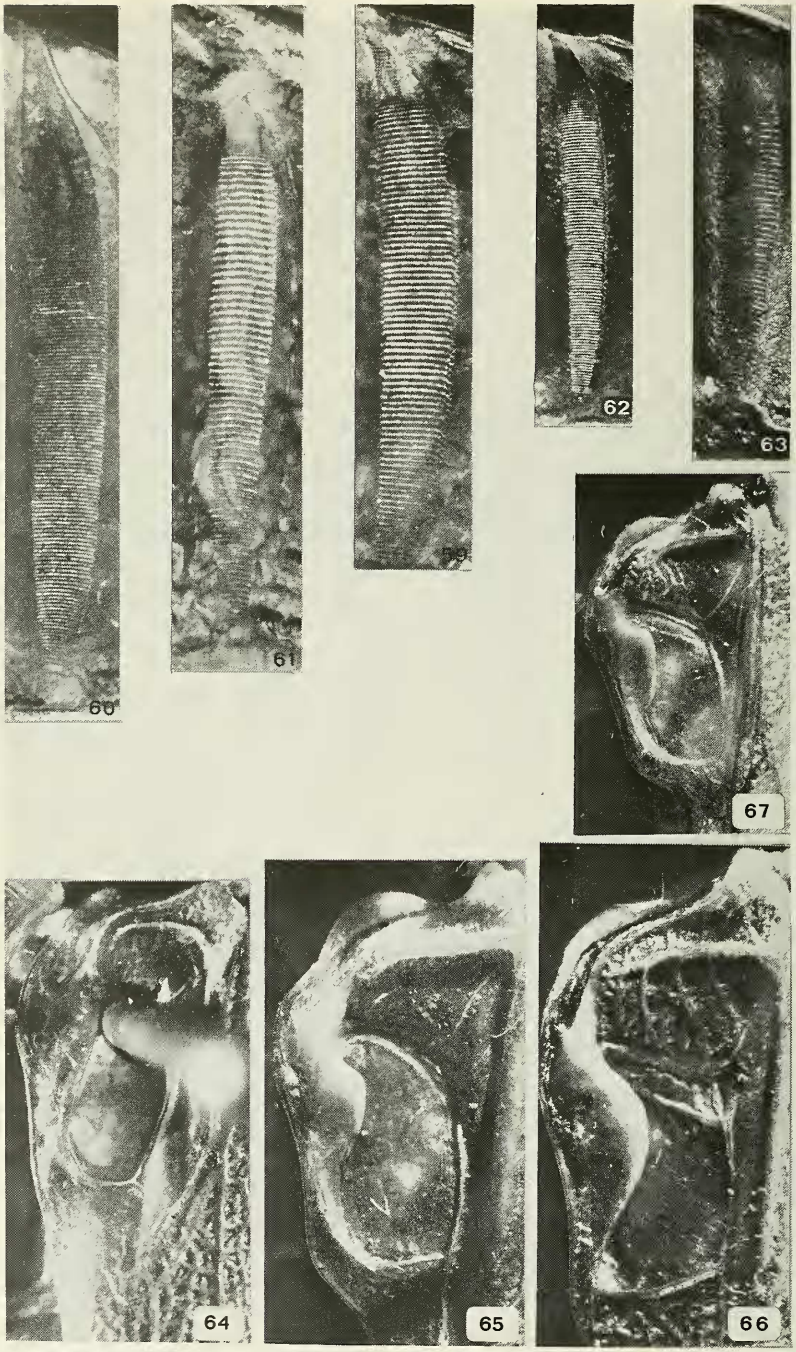
Figs. 34—41. *Segestes* species: 34, *vittaticeps* Stål (♂ lectotype); 35, *unicolor* Redtenbacher (♂ Koror, Palau, CAS); 36—37, *decoratus* Redtenbacher (36, ♀ holotype; 37, ♀ Murua Agr. Stat., DASF); 38, 41, *stibicki* sp.n. (38, ♂ paratype; 41, ♀ paratype); 39, *brevipennis* sp.n. (♂ holotype); 40, *cornelii* sp.n. (♀ paratype).



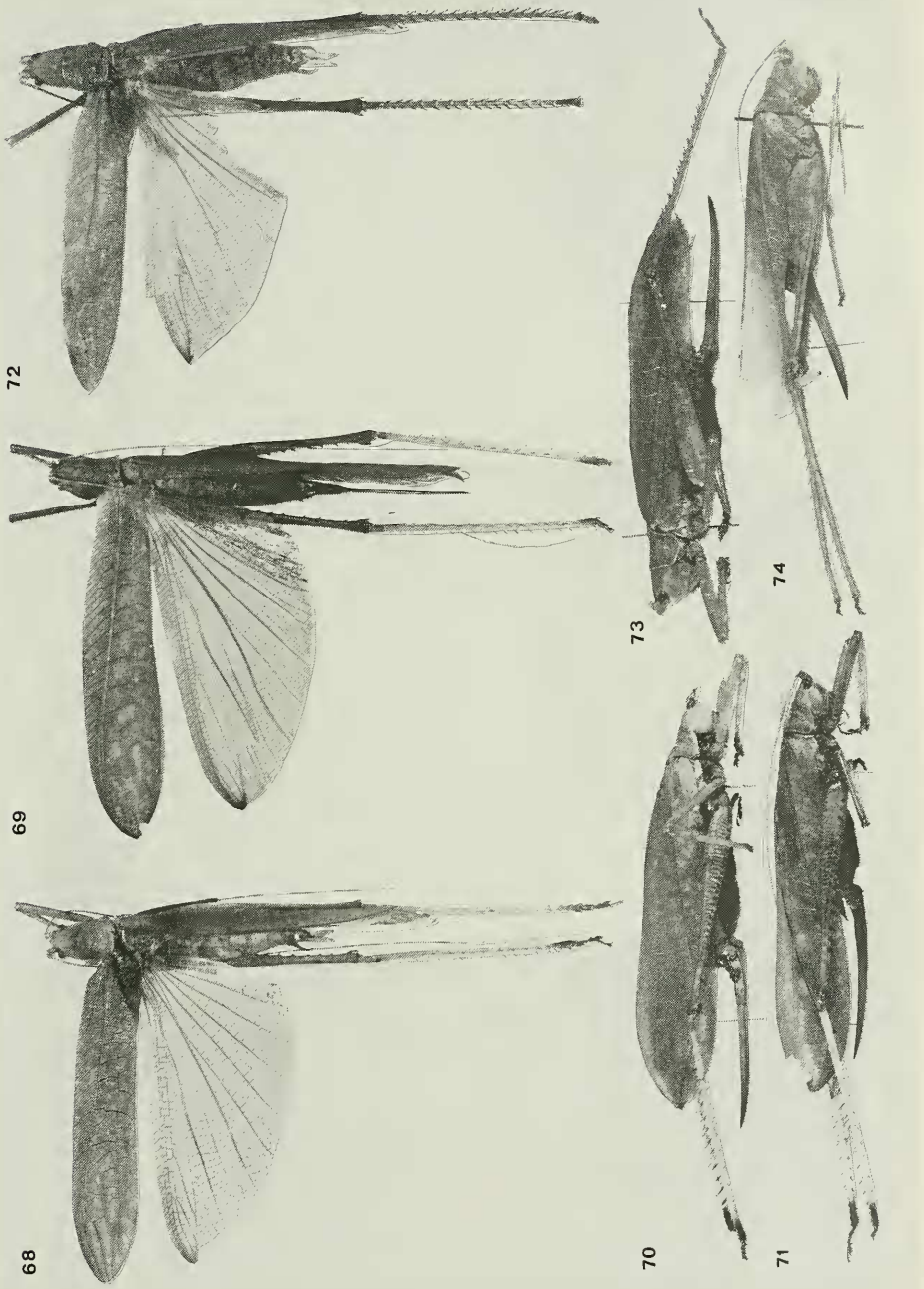
Figs. 42—44. *Segestes* species: 42—43, *stibicki* sp.n. (42, ♂ holotype; 43, ♀ paratype); 44, *brevipennis* sp.n. (♂ holotype).



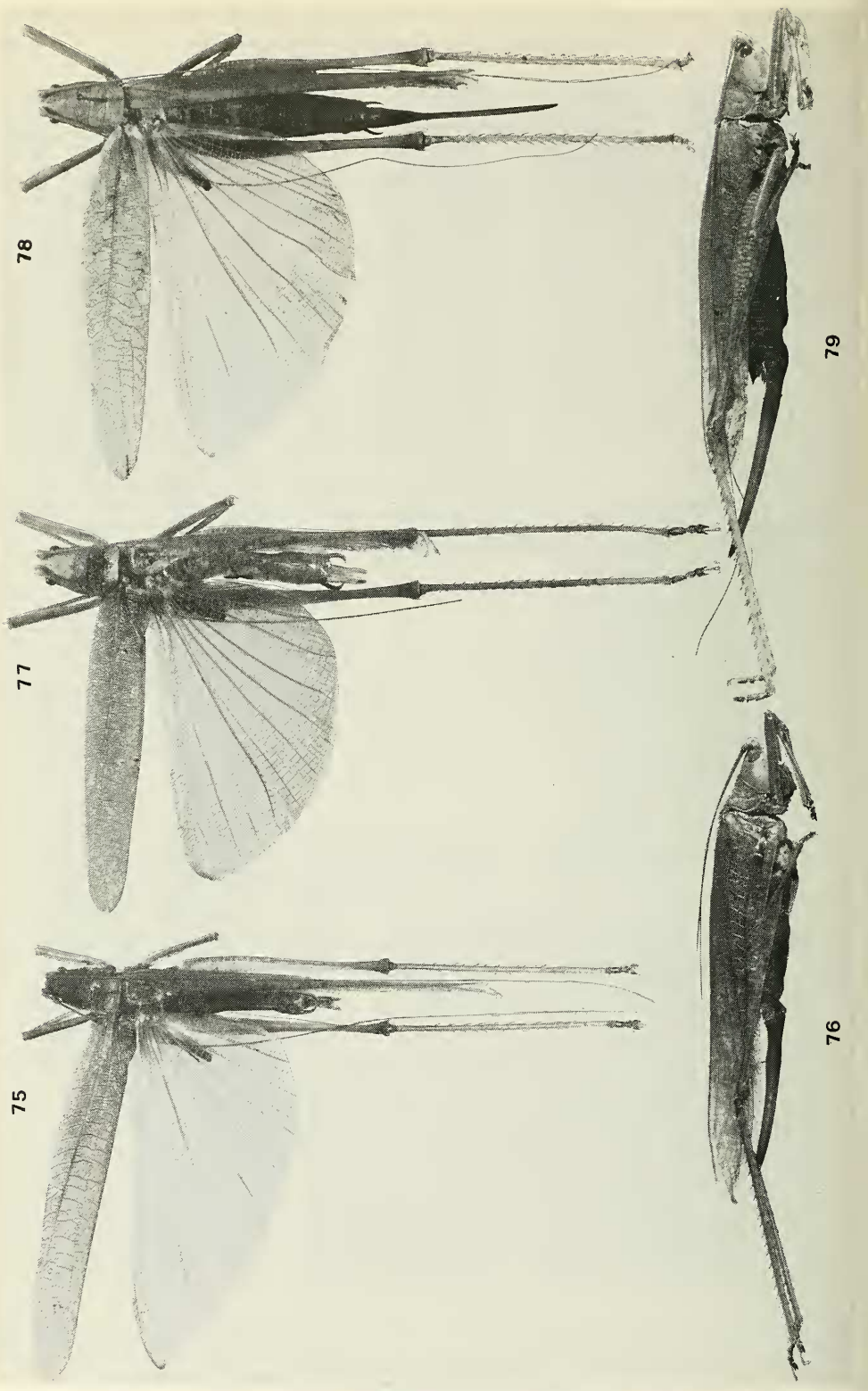
Figs. 45—58. *Segestes* species: 45—47, fastigium of vertex: 45, *decoratus* Redtenbacher (♂ Casey's Pl., Popondetta, DASF); 46, *cornelii* sp.n. (♂ paratype); 47, *stibicki* sp.n. (♀ paratype); 48—52, male subgenital plate: 48, *vittaticeps* Stål (lectotype); 49, *decoratus* Redtenbacher (Siki, DASF); 50, *cornelii* sp.n. (paratype); 51, *stibicki* sp.n. (holotype); 52, *brevipennis* sp.n. (holotype); 53—58, male cercus: 53, *vittaticeps* Stål (lectotype); 54, *unicolor* Redtenbacher (Koror, Palau, CAS); 55, *decoratus* Redtenbacher (Siki, DASF); 56, *cornelii* sp.n. (paratype); 57, *stibicki* sp.n. (holotype); 58, *brevipennis* sp.n. (holotype).



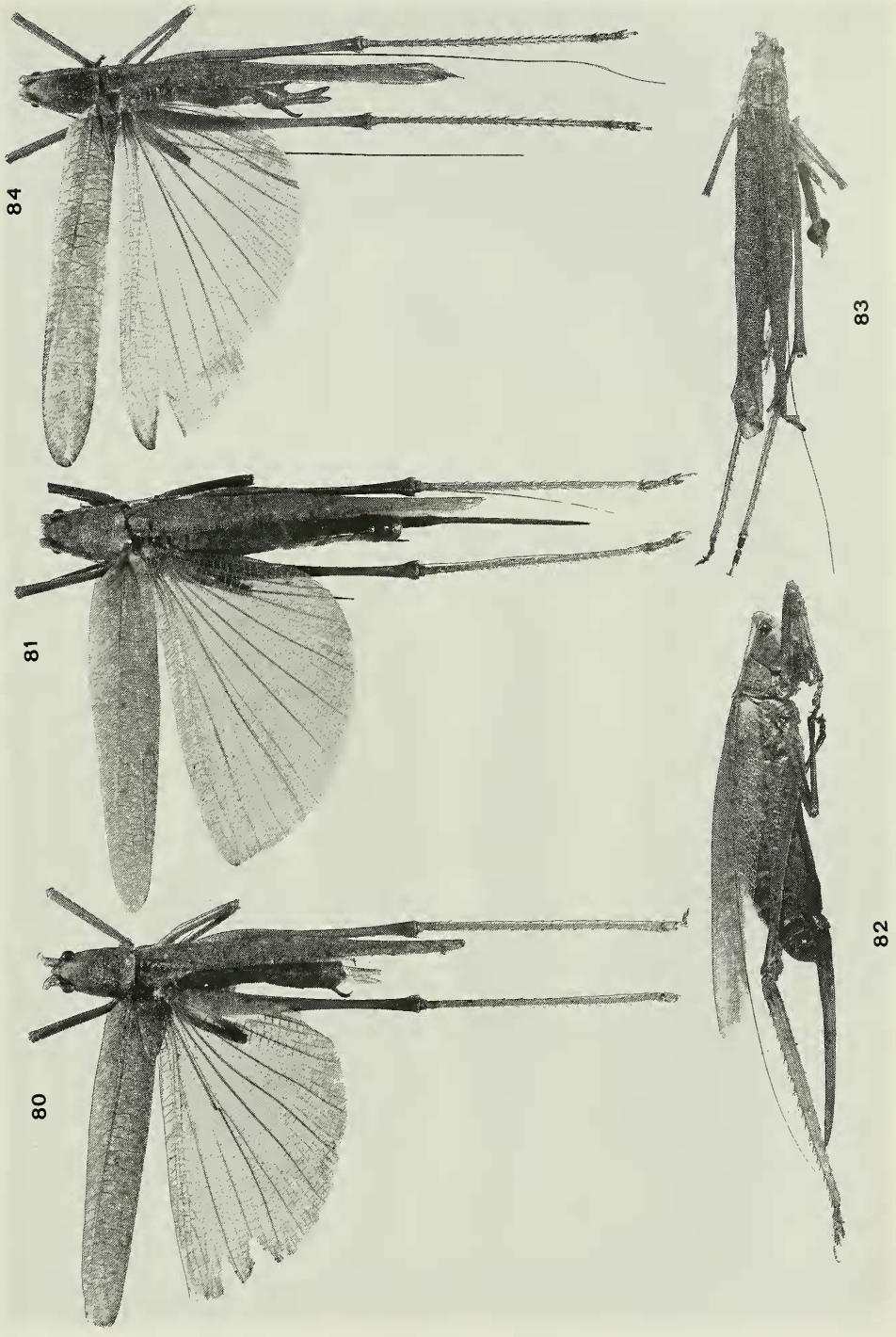
Figs. 59—67. *Segestes* species: 59—63, stridulatory file of left male fore wing: 59, *unicolor* Redtenbacher (Koror, Palau, CAS); 60, *decoratus* Redtenbacher (Siki, DASF); 61, *cornelii* sp.n. (paratype); 62, *stibicki* sp.n. (holotype); 63, *brevipennis* sp.n. (holotype). 64—67, stridulatory area of right male fore wing; 64, *vittaticeps* Stål (lectotype); 65, *decoratus* Redtenbacher (Casey's Pl., Popondetta, DASF); 66, *cornelii* sp.n. (paratype); 67, *stibicki* sp.n. (holotype).



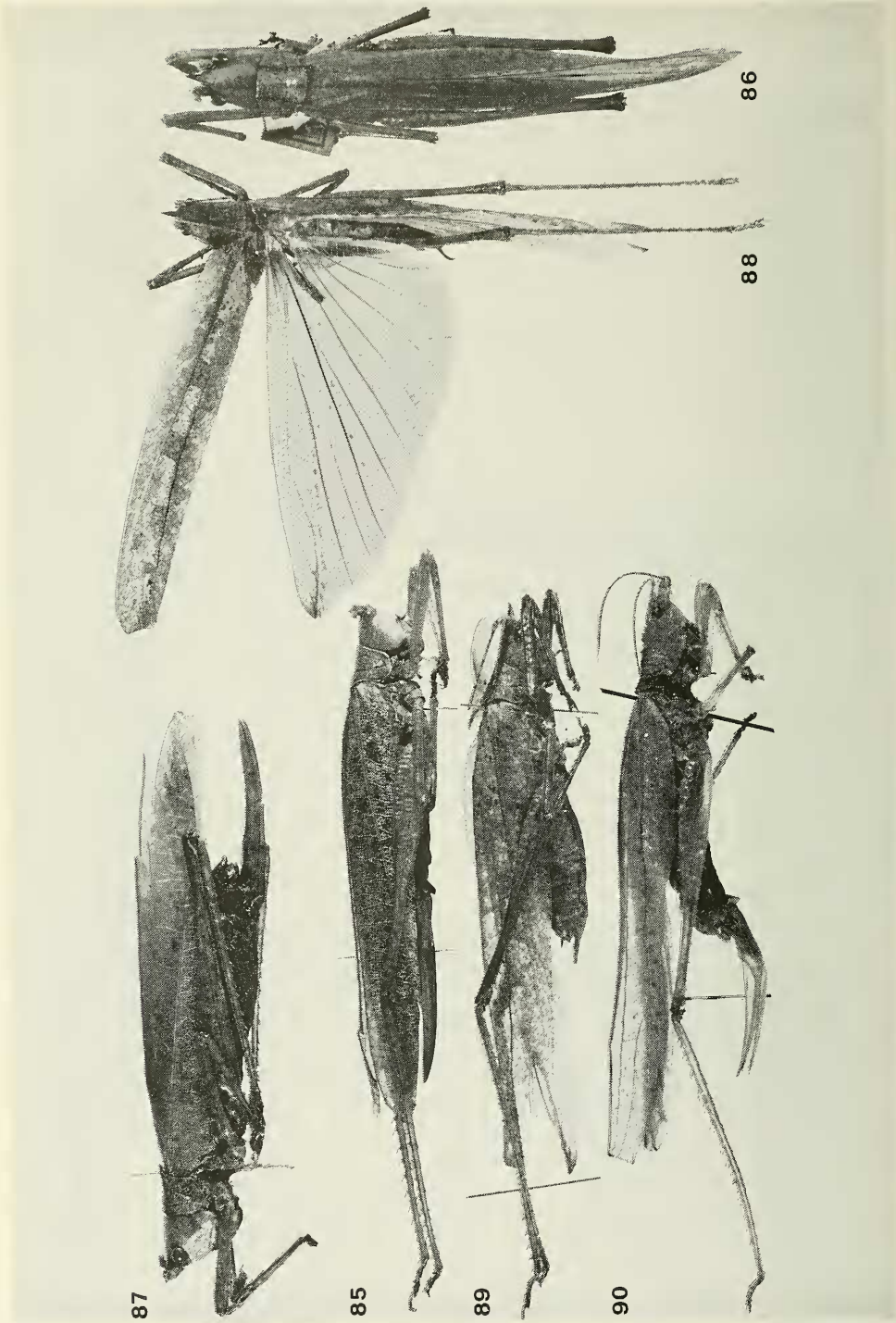
Figs. 68—74. *Segestidea* species: 68—71, *novaeguineae* (Brancsik) (68, ♂ Kulili Pl., Karkar I., DASF; 69, ♀ holotype of *Sexava femorata*; 70, ♀ Hollandia, RNH; 71, ♀ Port Moresby, CW); 72—73, *rufipalpis* (C. Willemse) (72, ♂ holo-, 73, ♀ allotype); 74, *uniformis* (C. Willemse) (♀ holotype).



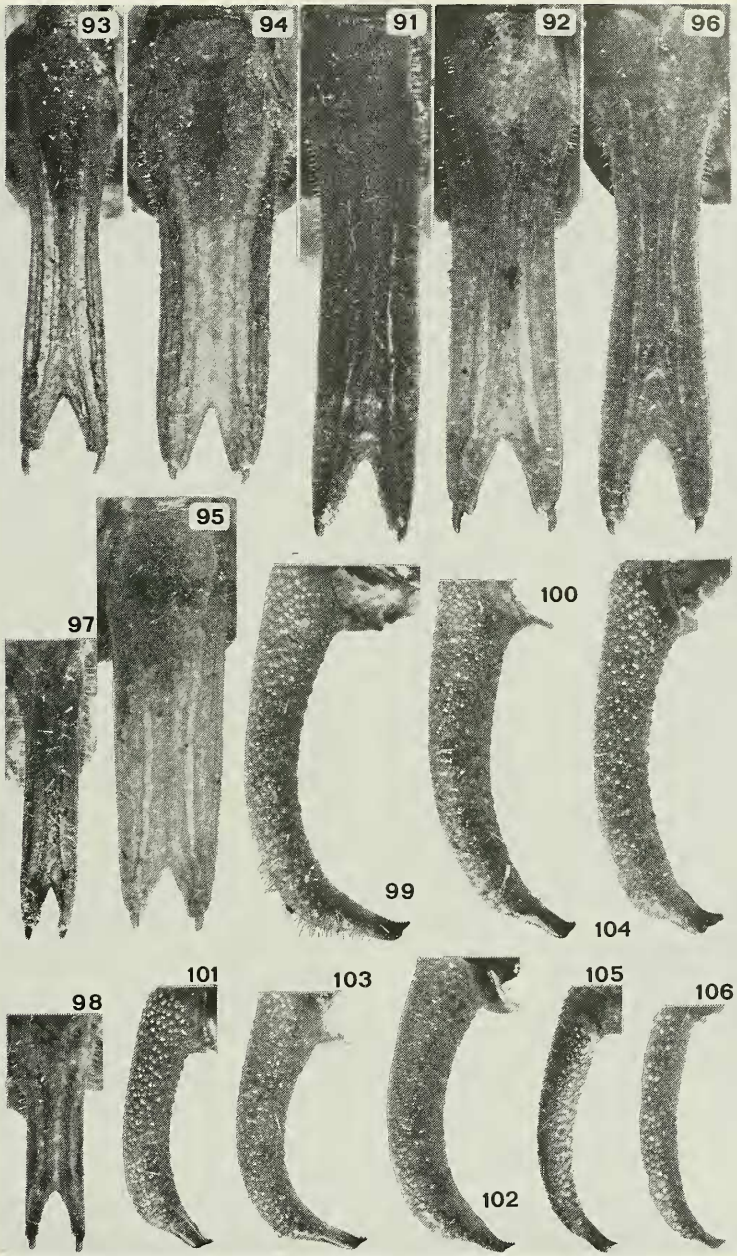
Figs. 75—79. *Segestidea* species: 75—76, *uniformis* (C. Willemse) (75, ♂ Tulo Pl., Manus I., DASF; 76, ♀ Pak I., DASF); 77—79, *gracilis gracilis* (C. Willemse) (77, ♂ Londolovit, Lihir Is., CW; 78, ♀ Mahur I., CW; 79, idem).



Figs. 80—84. *Segestidea* species: 80—82, *gracilis simulatrix* ssp.n. (80, ♂ holo-, 81, ♀ paratype, similar locality, CW; 82, idem); 83—84, *leefmansi* (C. Willemse) (83, ♂ holotype; 84, ♂ Metakabul Pl., New Ireland, CW).



Figs. 85—90. *Segestidea* species: 85, *leefmansi* (C. Willemse) (♀ Umbukul, New Hanover, DASF); 86—87, *acuminata* (Kästner) (♀ holotype); 88—90, *marmorata occidentalis* ssp.n. (88—89, ♂ holo-, 90, ♀ paratype, Hollandia).



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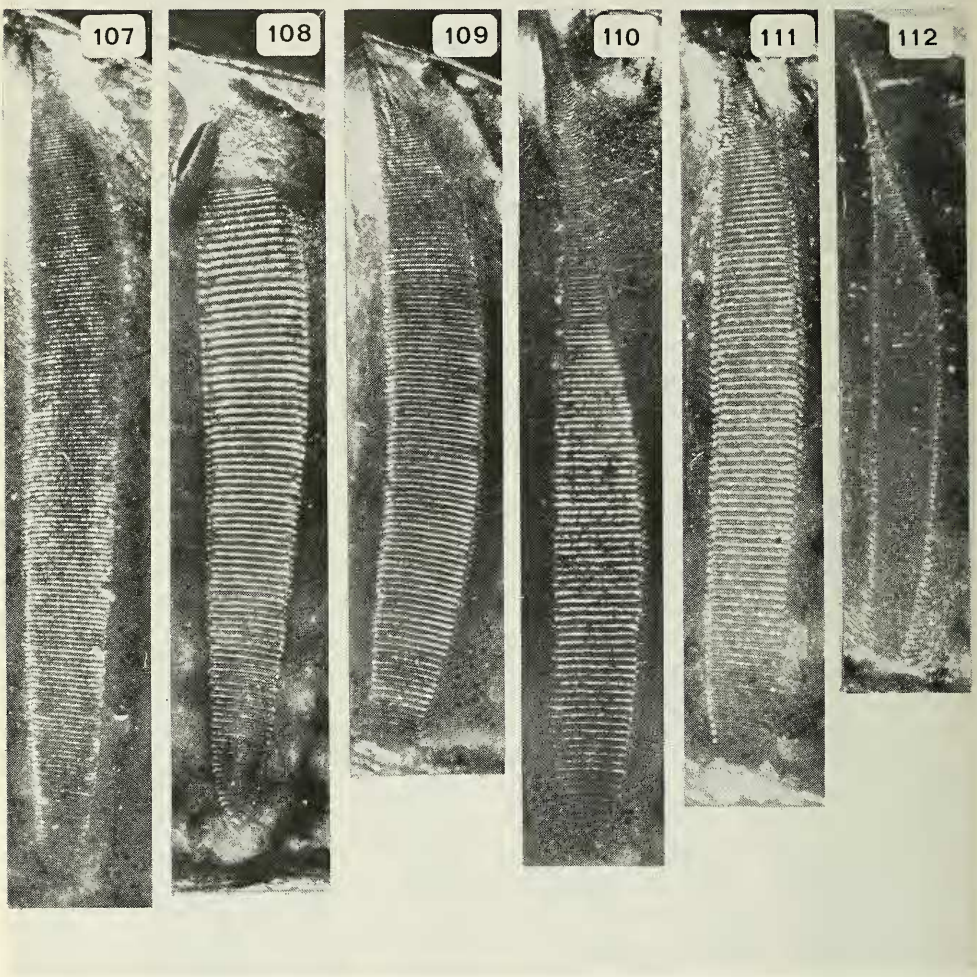

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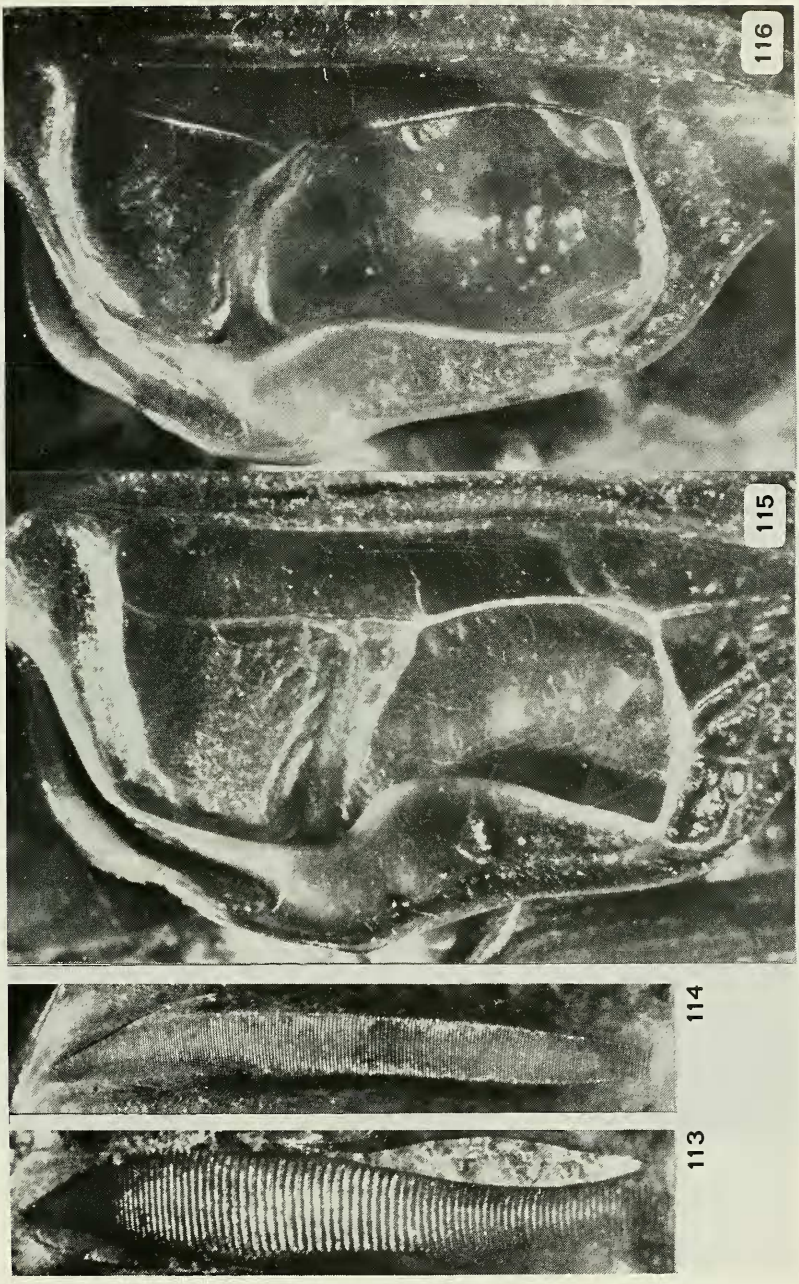

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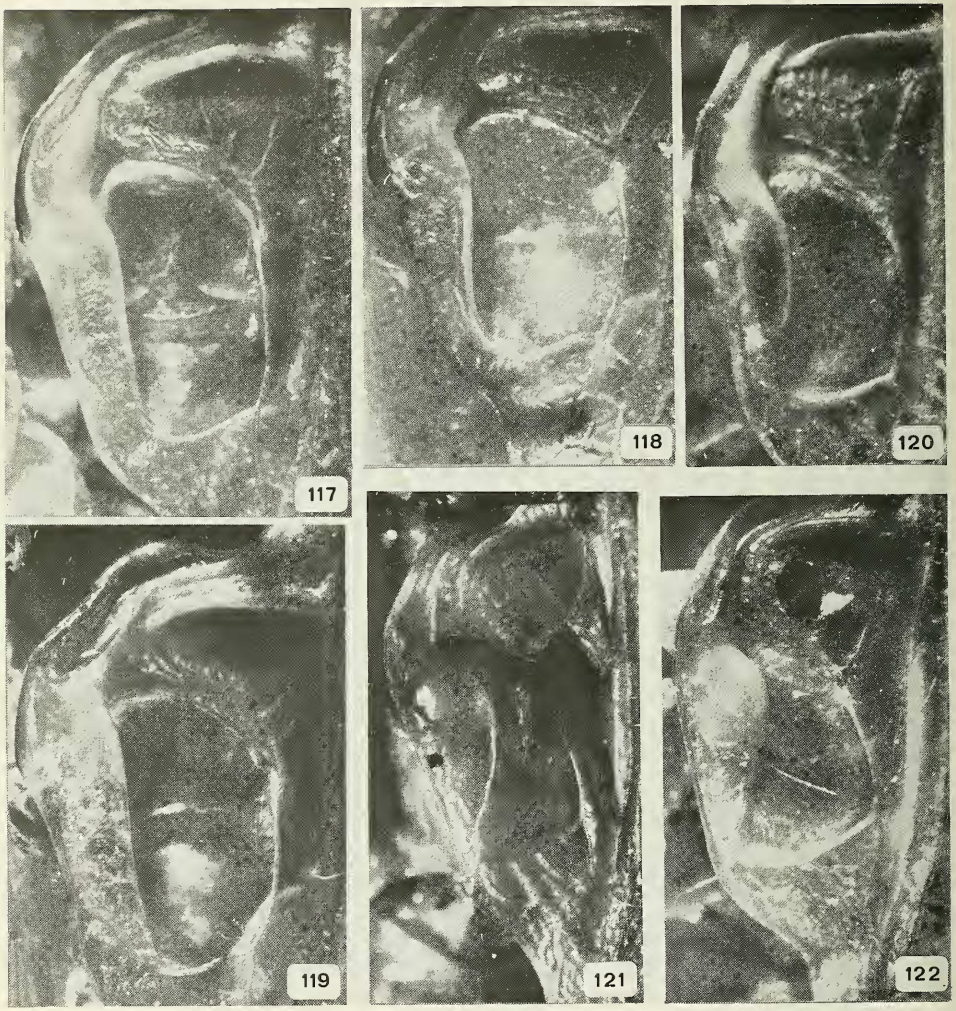

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(Synonyms in italics)